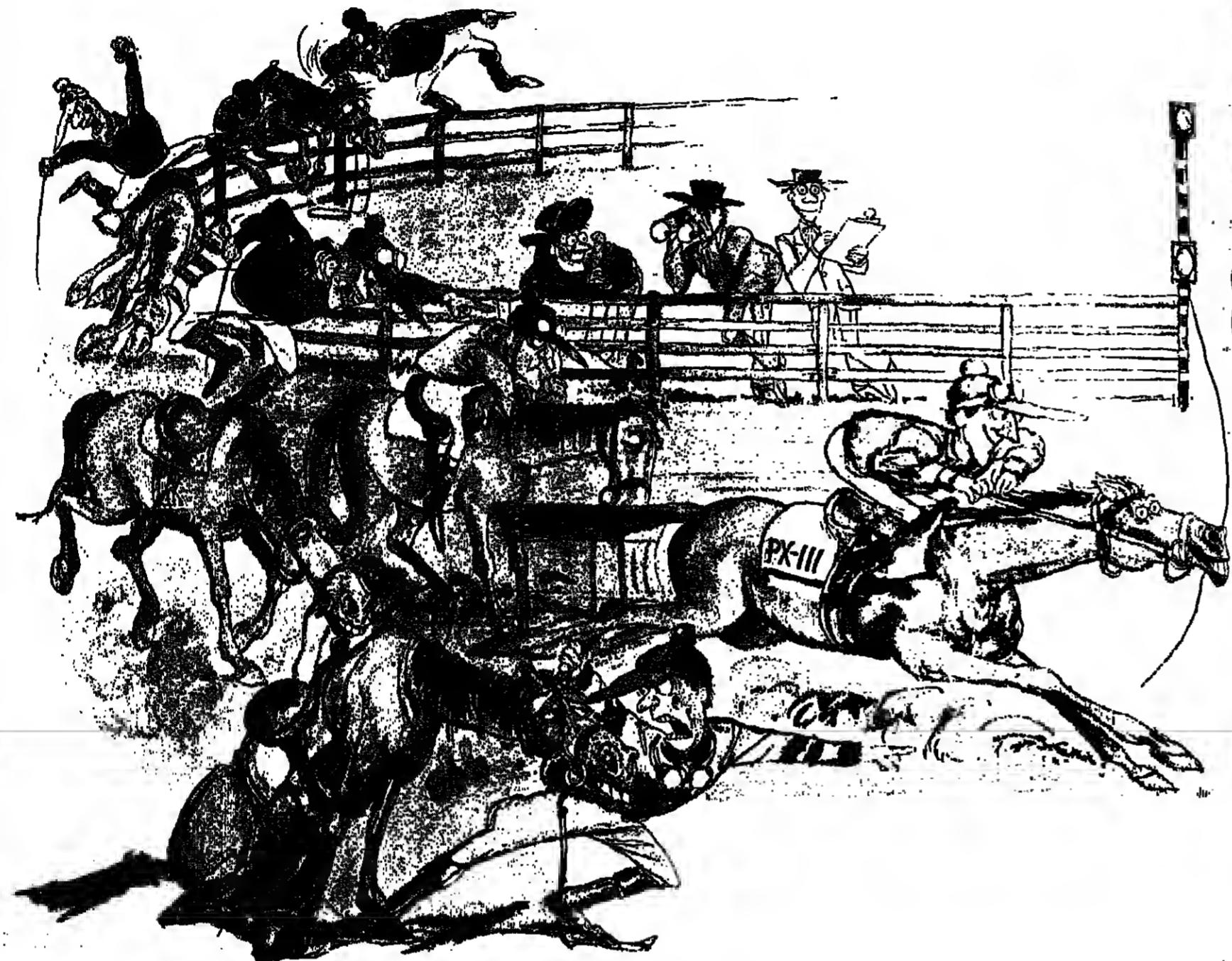


PX-111...for top performance right down to the wire.



If you're using diundecyl phthalate (DUP) as an additive in wire and cable insulation and jacketing, USS Chemicals has some good news. It's called PX-111.

PX-111 is the latest addition to the widest range of plasticizer capability in the industry. It has several superior performance characteristics when compared to DTDP. For example, it has lower temperature flexibility. It has lower compound viscosity, making it easier to handle and process. And PX-111 has higher heat stability than DTDP.

What does PX-111 mean to you? It means an alternative. You now have another supplier, one who can give you consistency of quality and the assurance of topnotch technical assistance.



Plasticizers

Products of USS Chemicals,
Division of United States Steel

Olin, Du Pont Boost Electronics

Two major US chemical firms took steps to enlarge their presence in the electronics industry last week. E.I. du Pont de Nemours & Co. purchased Tau Laboratories, Inc., Poughkeepsie, N.Y., a maker of photomask products used in integrated circuits production for \$45 million in common stock. At the same time, Olin Corporation formed a joint venture with Asahi Glass Company Ltd., Tokyo, Japan, to produce thick-film ceramic substrates for the electronics market.

Du Pont's acquisition accompanies a corporate reorganization designed to set up business units to serve Du Pont's electronics, printing and industrial imaging and health-care industries. One unit will be

called the imaging systems department, another, the electronics department, and a third unit will be renamed the medical products department.

Tau Laboratories will join the electronics department. Du Pont says Tau is the only fully integrated maker of photomask products (which also includes photomask blanks and pellicles) in the world.

The company has the largest electron beam manufacturing capacity in the domestic private sector. Du

Continued on Page 15

OLIN RESEARCH: The company's metals research laboratories help keep the company competitive in high performance alloys, specialty products for electronics.



VOLUME 230
Number 12

Chemical Marketing Reporter

SEPTEMBER 22, 1988

Linear Olefins Makers In Expansion Round

The company expects to increase the US share to around 25 percent by the early 1990's.

In August, ICI agreed to acquire the North American paint, coating, resins and "Macco" adhesives businesses of Glidden from Hanson Industries for \$580 million in cash (CMR 8/18/86, pg. 7). Hanson bought the businesses through its acquisition of SCM Corporation earlier this year.

ICI said in August that the purchase of the Glidden assets would "accelerate dramatically" the company's expansion in the \$25 billion world paint market and add to ICI's resistance to cyclical downturns in commodity chemicals and associated downstream products — a major corporate objective.

Commenting further on the reorganization announced last week, Mr. Harvey-Jones said the move "will enable us to strengthen our position as one of the most efficient chemical companies in Europe."

Dick Lindsell, chairman of ICI's Mond Division, will serve as chief executive of the new group. Other members of the group's board of directors will include Brian Appleton, David Beynon, Rodney Brown, Ralph Hodge and Donald Mackay.

Non-executive board members will include Frank Whiteley, chairman, and Sir Robin Ibbotson and Alan Clements, all board members of the parent company.

The reorganization of ICI's European commodity chemical operations follows the restructuring of the UK company's US business this Spring under the banner of ICI Americas, Inc. (CMR 6/2/86, pg. 7).

The US currently accounts for more than 15 percent of ICI's worldwide business, and

pany is calling for a 450-million-pound-per-year unit to be built in Japan by 1990. Mitsubishi already has a 680-million-pound-per-year unit in Mizushima, Japan.

At home, all three producers have expansion plans. Chevron Chemical Company says it will have 50 million pounds more annual capacity on line at its Cedar Bayou unit by November 1.

Total capacity after the expansion will be 250 million pounds per year of single C₂ through C₄ cuts with multiple cuts in the C₂ plus range.

Ethyl Corporation has announced plans to expand its 800-million-pound-per-year facility by about 150 million pounds by mid 1987. The expansion will focus on C₂ through C₄ chain lengths.

Shell Chemical Company USA has completed a capacity expansion at its Geismar, La. unit, which brings its total annual capacity to 800 million pounds per year of alpha and internal olefins.

The increased need for linear olefins is being driven primarily by copolymer consumption for linear low-density polyethylene. This growth is coming largely at the expense of conventional low-density polyethylene, according to observers.

While total worldwide demand for low-

Continued on Page 17

Fluorocarbon Group Calls For a Cap on Production

A coalition of US chlorofluorocarbon producers and users called on the Reagan Administration last week to help negotiate, if necessary, a global cap on CFC production capacity.

Directors of the Alliance for Responsible Management approved a seven-point policy statement regarding US policy on the chemicals some scientists have linked to ozone depletion.

The policy calls, for the first time, on the US government to work "in cooperation with the world community under the auspices of the United Nations Environment Programme (UNEP) to consider establishing a reasonable global limit on the future rate of growth of fully halogenated CFC production."

Richard Barnett, chairman of the alliance which represents 500 companies, including the major producers, said he considers the statement to be an outline of responsible US policy with regard to CFC's that is "compatible with current scientific understanding and consistent with the original goals of the CFC alliance."

Environmental Protection Agency has proposed, but not implemented, rules to cap on some types of production, the coalition's policy statement calls for the adoption of policy statement calls for the adoption of voluntary conservation programs by CFC

and users; the continuation of research into adequate substitutes; the continuation and

protect the ozone through a complex series of reactions.

However, more than a decade of scientific studies by the industry and government have yielded conflicting results regarding the impact of CFC's on the ozone layer.

"The alliance does not believe that the scientific information demonstrates any actual risk from current CFC use, or emissions," says Mr. Barnett.

"We recognize, however, the growing concern for potential ozone depletion and climate change as a result of large future growth of CFC emissions and the buildup of other trace gases in the atmosphere," he adds.

Mr. Barnett says the industry supports further scientific research and believes that regulatory policies should be periodically re-examined in the light of additional findings.

"We believe that large future increases in fully halogenated CFC's would be unacceptable to future generations and, in our view, it would be inconsistent with the goals of this alliance to ignore the potential for risk to those future generations," says Mr. Barnett.

In addition to supporting a worldwide limit on some types of production, the coalition's policy statement calls for the adoption of voluntary conservation programs by CFC

and users; the continuation of research into adequate substitutes; the continuation and

Continued on Page 48

SHELL'S SHOP: Overall view of the Shell higher olefin process plant at Stanlow in the UK. The company is moving ahead in its worldwide expansion program for building block alpha-olefins made by the process.

3

September 22, 1988 CHEMICAL MARKETING REPORTER

Ceramics, Polymers, Composites Are a Key for US Manufacturers

New structural materials, such as ceramics, polymers, metals and composites, hold the promise to renew the US's international competitiveness in manufacturing, according to a report released last week by the Congressional Office of Technology Assessment. The report was released at an oversight hearing by the House science and technology materials subcommittee on the White House's national critical materials council. It notes that products ranging from cutting tools to tennis rackets are being made from these new materials, but some applications that have been considered promising may not pan out.

For example, OTA says structural ceramics will not be used extensively in passenger car engines before the year 2000. Before polymer composites can compete with steel in mature, commercial applications such as structural automobile components, new high-volume, low-cost manufacturing technologies must be developed.

Even so, these materials will provide many other opportunities in aerospace, automotive, industrial, medical, and construction industries in the next 25 years, according to OTA.

In the next ten to fifteen years, military applications are likely to grow very rapidly and, on the commercial side, biocompatible materials which can be implanted in the body could provide a major market.

Since other industrialized countries are competing actively for the large commercial and military markets, the US cannot take for granted that it will capture these markets, OTA reports.

Although the US has a technological lead in the development of some materials, particularly for military applications, it often lags in developing commercial products. By continued on page 16

Sabic's Sharq Unit Receives Financing

Eastern Petrochemical Company (Sharq), a joint venture of Saudi Basic Industries Corporation and a 96-company Japanese consortium led by Mitsubishi, has signed a revolving and term loan agreement involving 12 national and international banks.

The agreement covers the final 10 percent financing of the company's Al Jubail, Saudi Arabia, petrochemical plant and includes loans for \$28.5 million Saudi Riyals (about \$90 million) and for \$20 million. The dollar portion will be used for financing that requires payment in that currency, Sabic says.

Sharq came on stream last year with design capacity of 130,000 metric tons per year of linear low-density polyethylene and 30,000 tons of ethylene glycol. In the first year of commissioning the plant produced 31,000 metric tons of LLDPE and 49,000 tons of EG, the company says.

J&J Loses Bid On Recall Costs

A Federal judge in Newark, N.J., last week ruled that Johnson & Johnson's product liability insurance does not cover the costs associated with the company's 1982 recall of its "Tylenol" product.

The company recalled the product after the deaths of seven Chicago area residents, who took cyanide-laced "Tylenol" capsules. That incident, which has been repeated elsewhere since, led to a nationwide move toward tamper-resistant packaging.

Although Johnson & Johnson cancelled its recall insurance prior to the tampering cases in Chicago, the company argued that recall costs of more than \$100 million should be covered by its regular product liability insurance.

It was unclear last week whether Johnson & Johnson would appeal the ruling. The Proprietary Association, an industry trade group, called the ruling last week "troubling." Many drug firms reportedly do not carry recall insurance because of high costs.

Eval Completes Unit For New Copolymers

Eval Company of America, a joint venture of Enron Company and Kuraray Company, Osaka, Japan, has completed its atactic vinyl alcohol plant at Pasadena, Tex.

The new plant, designed to produce 22 million pounds annually of EVOH, is the first such grassroots plant in the US. Eval notes, Commissioning work on the plant began in August with commercial production expected in the fourth quarter of 1988.

For the past three years, the company has imported "Eval" resins from Kuraray. The copolymer resins are said to offer outstanding gas barrier properties, as well as resistance to odor and flavor penetration.

Polyester Project Set

Chemtex Fibers, Inc. has been awarded a contract with Tong Kook Synthetics Fibers, Gumi, Republic of Korea, for a 10,000-metric-ton-a-year expansion of polyester POY yarn. The project represents an expansion of the original facility engineered by Chemtex and brought on stream in April 1986. Based on ICI technology, the process includes continuous polymerization and direct spinning.

DSM Will Extend Phosphate Activity

DSM has signed a cooperative agreement with its main phosphate supplier, Ottica Cheritier des Phosphates (OCP) of Morocco, which will extend the Dutch company's activities in the phosphate area.

The agreement in principle includes joint development of the phosphate-processing facilities of DSM Mestoffen BV at Rotterdam. DSM Mestoffen is the Dutch affiliate of the company's agricultural division.

Located at the Rotterdam site are a 220,000-metric-ton-a-year phosphoric acid plant, a 170,000-ton ammonium phosphate plant and a mixed fertilizer plant with capacity for 270,000 tons of product per year.

DSM, with know-how in phosphate production and processing, will work with DSM Mestoffen, which has concentrated on developing its ammonia technology, to expand phosphate activities. A definitive agreement is expected to be signed in the first half of 1989.

ITC Says Urea May Be Dumped

International Trade Commission says there is a reasonable indication that the nitrogen fertilizer industry in the US is being injured by imports of urea from three Eastern Bloc nations that are allegedly being sold at less than fair value.

The commissioner's 5-0 vote in favor of continuing the antidumping investigation came six weeks after a coalition of domestic nitrogen producers filed the complaint against East Germany, Romania and the Soviet Union, (CMR, 7/21/88, pg. 3).

Urea imports from the Eastern Bloc have risen steadily since 1982, when they had a 2 percent share of the US market. In 1985, non-market economy imports accounted for 11 percent of the market. Another surge of urea imports has pushed the market share figure up to 19 percent, domestic producers say.

Du Pont Contracts For a Power Plant

O'Brien Energy Systems, Inc., Philadelphia, Pa., has signed a letter of intent with E.I. du Pont de Nemours & Co. for a \$40 million project which would be developed at Du Pont's Raritan chemical plant in Gibbstown, N.J., to supply steam up to 60,000 pounds per hour for twenty years.

Electricity would be sold to local utilities on long-term contracts.

The 43-megawatt Du Pont project would be the third facility for the company in O'Brien's development backlog. An \$80 million, 97-megawatt plant is planned for Du Pont's Parlin, N.J. chemical facility and a \$47 million, 36-megawatt plant will furnish steam to its Antioch, Calif. facility.

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MANAGING EDITOR Curtis A. Deyo
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NEWS EDITOR Owen Keen
WASHINGTON EDITOR Glenn Hesse, 1057C National Press Building, Washington, D.C. 20045
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NEW YORK (212) 732-9200-A; Amanda L. Bosc, Kenneth M. Carroll, Robert W. Wakell, and Wilson S. Winney
CHICAGO (312) 577-8880-Charles H. Cesterman, James C. Oesemann, Arlington Publishers, Inc., P.O. Box 1555, Arlington Heights, IL 60006
HOUSTON (212) 732-9200-B; Wilson S. Winney, Schnell Publishing Company, Inc., 100 Church Street, New York, NY 10007-2984
LOS ANGELES (213) 450-9001-Richard W. Walker, R.W. Walker Company, 2718 Ocean Park Boulevard, Suite 1010, Santa Monica, CA 90006
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EUROPE (311) 400-8885-Robert Broekman, American Publishers Representatives, Inc., No. 4 rue Robert de Flers, 75016 Paris, France
JAPAN (03) 583-1181-Hiroshi Sato, IBM, Inc., 4-1 Chome, Higashiazabu, Minato-ku, Tokyo, Japan
CHINA (Tel: 5-6332161, Telex: 75386 AMRHK HK)-Allison Lutz, China Consultants International (HK), Ltd., Suite 905, Guardian House, 32, Ol Kwen Road, Happy Valley, Hong Kong
CNR AD PRODUCTION-Hai-yan Brennen, Physics Center
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Marketing Staff: J. Ronald Ooran, Don L. Richards, Charles H. Cesterman, James C. Oesemann, Richard W. Walker, R.W. Walker Company, 2718 Ocean Park Boulevard, Suite 1010, Santa Monica, CA 90006.

Administrative Staff: Robert Broekman, American Publishers Representatives, Inc., 4 rue Robert de Flers, 75016 Paris, France.

Editorial Production: Charles H. Cesterman, James C. Oesemann, Richard W. Walker, R.W. Walker Company, 2718 Ocean Park Boulevard, Suite 1010, Santa Monica, CA 90006.

Production: Charles H. Cesterman, James C. Oesemann, Richard W. Walker, R.W. Walker Company, 2718 Ocean Park Boulevard, Suite 1010, Santa Monica, CA 90006.

Design: Charles H. Cesterman, James C. Oesemann, Richard W. Walker, R.W. Walker Company, 2718 Ocean Park Boulevard, Suite 1010, Santa Monica, CA 90006.

Photography: Charles H. Cesterman, James C. Oesemann, Richard W. Walker, R.W. Walker Company, 2718 Ocean Park Boulevard, Suite 1010, Santa Monica, CA 90006.

Marketing: Charles H. Cesterman, James C. Oesemann, Richard W. Walker, R.W. Walker Company, 2718 Ocean Park Boulevard, Suite 1010, Santa Monica, CA 90006.

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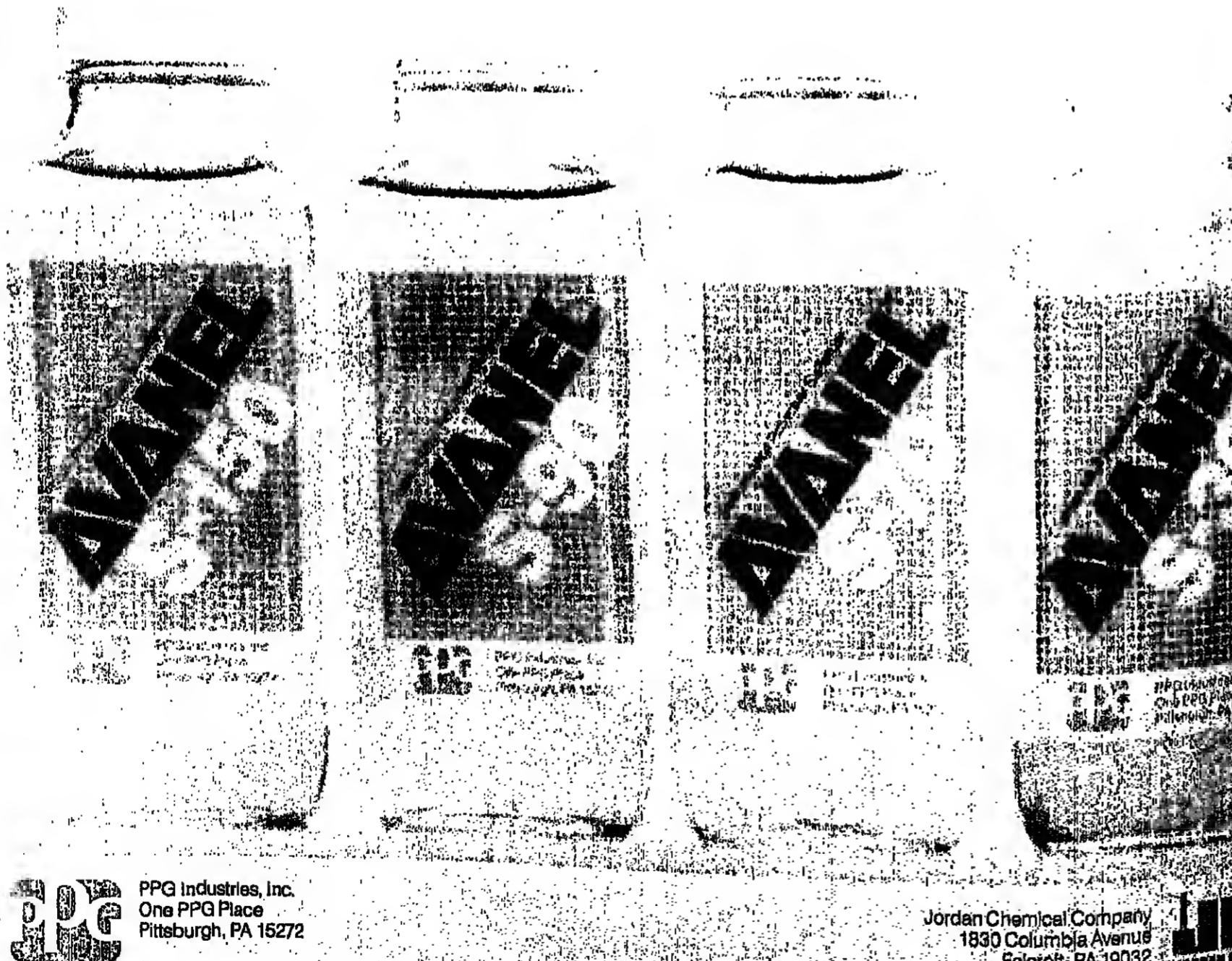
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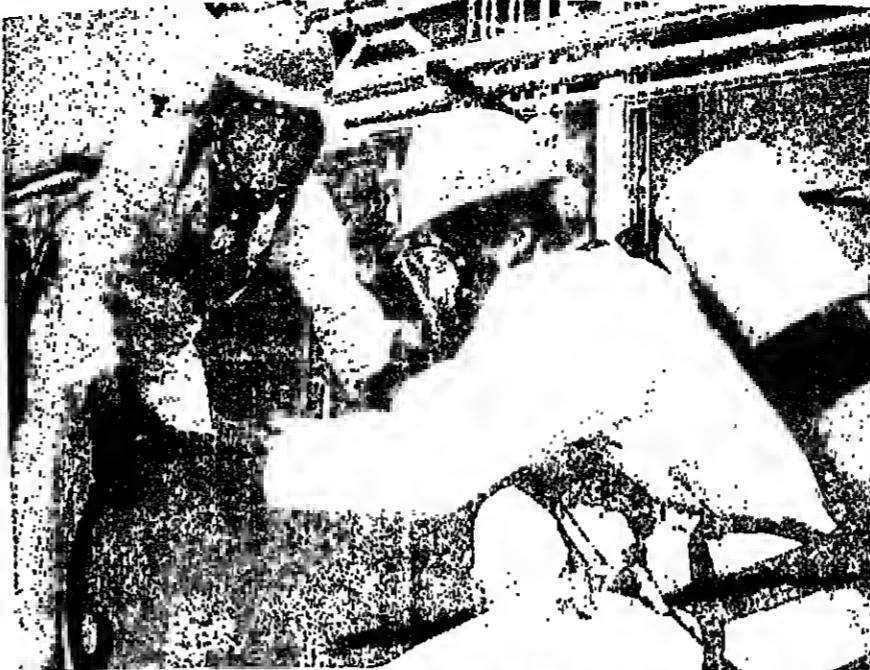
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WASTE REDUCTION: Most experts agree waste reduction should receive top priority, but few resources have been committed to doing so, says the Office of Technology Assessment. Hazardous waste problems abound, according to a new OTA report, but so do opportunities for reducing industrial hazardous waste generation.

Photo courtesy Industrial Training Systems Corporation

Hazardous Waste Problems Are on All Sides, Says OTA

Hazardous waste problems — ranging from contaminated sites that require million-dollar cleanup to lost drinking water supplies — are everywhere, but so are opportunities to prevent future problems by reducing the generation of industrial hazardous waste, says a new study.

Reducing the generation of waste is the most certain way to reduce risks to health and the environment from hazardous waste and it's the best way to address what many people see as a crisis, according to the report by the Congressional Office of Technology Assessment.

Most hazardous waste experts have agreed for a decade that waste reduction should receive top priority, says OTA, but few resources have been committed to doing so. If waste reduction is the best answer, it deserves top priority and the government and industry should get serious and make it work, OTA advises.

Despite the substantial benefits of waste reduction, more than 80 percent of Federal and state environmental spending goes to controlling pollution after waste is generated.

US spending on the environment has risen

steadily over the past 14 years to about \$70 billion annually — equivalent to \$10 million a page for every one of the 7,000 pages of Federal environmental regulations and statutes, says OTA.

The attention and resources given to legally mandated pollution control activities limit the amount of thought, time, and money that industry can devote to waste reduction, says OTA.

Virtually all industries, whether high technology, smokeshack, or small shops, generate hazardous waste. Using a broad definition that includes wastes that threaten health and the environment and enter the air, land, and water, OTA says that more than a ton of hazardous waste is generated annually for every person in the US.

OTA points out that not all hazardous waste can be eliminated, and an effective pollution control system will always be needed. But a national commitment to waste reduction can insure that the burden of hazardous waste does not continue to grow and threaten future generations, says OTA.

Some firms in industry have already discovered that waste reduction serves their own economic interest. OTA says that the

Continued on Page 18

Engineered Enzymes' Aid In Fats and Oils Processing

Scientists from Genencor, Inc. say that new enzymes obtained using genetic engineering techniques can result in major changes in the products formed in enzyme catalyzed reactions.

By substituting specific amino acids in a typical hydrolytic enzyme, changes from two to twelvefold in the ratio of reaction products have been achieved.

Specifically designed or engineered enzymes could be particularly useful for improving trans-esterification reactions for the conversion of inexpensive oils into more highly valued triglycerides such as those in cocoa butter.

The protease enzyme subtilisin was the enzyme modified by genetic engineering techniques for these studies. Speaking at the American Chemical Society meeting in Anaheim, Calif., Dr. David Estell of Genencor active site of the enzyme can radically alter the capability of the enzyme to catalyze trans-esterification reactions rather than hydrolysis reactions.

Further applications include improvements in triglyceride hydrolysis for the production of specific fatty acids and monoglycerides, and the synthesis of high value-added peptides, and specific fatty acid or amino acid esters.

The enzyme engineering technology, for which patents have already been filed, is expected to enhance the commercial development of enzymatic trans-esterification of edible fats and oils.

Further applications include improvements in triglyceride hydrolysis for the production of specific fatty acids and monoglycerides, and the synthesis of high value-added peptides, and specific fatty acid or amino acid esters.

basic polyethylene capacity at BASF is half what it was five years ago. At the same time, the company has gone on a shopping spree for specialty resin units, while turning scientists loose in the laboratory to develop new resin systems. Last year BASF laid out some \$420 million on investments, acquisitions and research and development.

Continued on Page 70

The company has sharply trimmed vulnerable commodity thermoplastic capacity, while aggressively investing in new acquisitions and research and development in the fast-growing engineering plastics field.

Speaking at a trade press preview of Kunststoff '86 at the company's Ludwigshafen headquarters last week, BASF officials outlined the changes made and plans for the company's future in plastics, a business segment which represents over 15 percent of the company's total sales, according to Dr. Herbert Willems, a member of BASF's board of executive directors.

Last year, BASF plastics sales totalled 6.7 billion Deutsche marks (\$3.3 billion at current exchange rates), and a growing portion of the total is coming from advanced plastics. Dr. Willems says sales of these specialized resins are 8 percent to 10 percent above year-earlier levels, while commodity resin sales, with the exception of polypropylene, are up only marginally or are below 1985 totals.

The company has been busy reorganizing its commodity plastics business in the past five years, either by writing off assets, or upgrading the resin lines into specialty grades. The result, Dr. Willems says, is that

BASE PLASTICS: Restructuring of commodity operations has led BASF to put more emphasis on specialties such as advanced composite materials. ACM's are particularly applicable to high-value aerospace and aircraft applications.

Formaldehyde Makers See Flaws in Studies on Safety

In denying the claimed link to cancer and in criticizing the logic employed in some of the studies. Dr. Donald M. Hayes, of Burlington Industries and a member of the institute, accused one group of "judging scientific rules to bias the results in the direction they wanted—that is, an association with cancer."

Mr. Howlett disclosed that the industry has been producing a new low-emission resin that reduces by 95 percent the formaldehyde emissions in finished products. This should make it easy for companies handling the resins to keep their exposure limits even below one part per million.

What makes the whole situation one of "straining at a gnat," another spokesman said, was the fact that the industry has virtually already met the rules which are being drawn up by no less than four government agencies: Environmental Protection Agency, Occupational Safety & Health Agency, the Consumer Products Safety Commission and

Continued on Page 24

House Okays an Overhaul Of Nation's Pesticide Law

The House voted 328-4 Friday in favor of sweeping legislation to overhaul the nation's basic pesticide law after rejecting an attempt to double the fees agricultural chemical companies would be required to pay to re-register their products.

But in doing so, the chamber invited a veto from the White House by leaving the bill \$50 million short of fully covering the cost of the Federal government's re-registration program.

Aid primarily at strengthening public health protections, the bill to reauthorize and revise the Federal Insecticide, Fungicide & Rodenticide Act would accelerate Environmental Protection Agency's review, or re-registration of 600 pesticide chemicals that were approved for use before November 1984, but have yet to be fully tested for their health effects.

A fee of \$150,000 would be charged for the re-registration of each active ingredient, to be paid collectively by pesticide producers. Expected to produce about \$5 million per year, the fee would partially pay for EPA's re-registration effort.

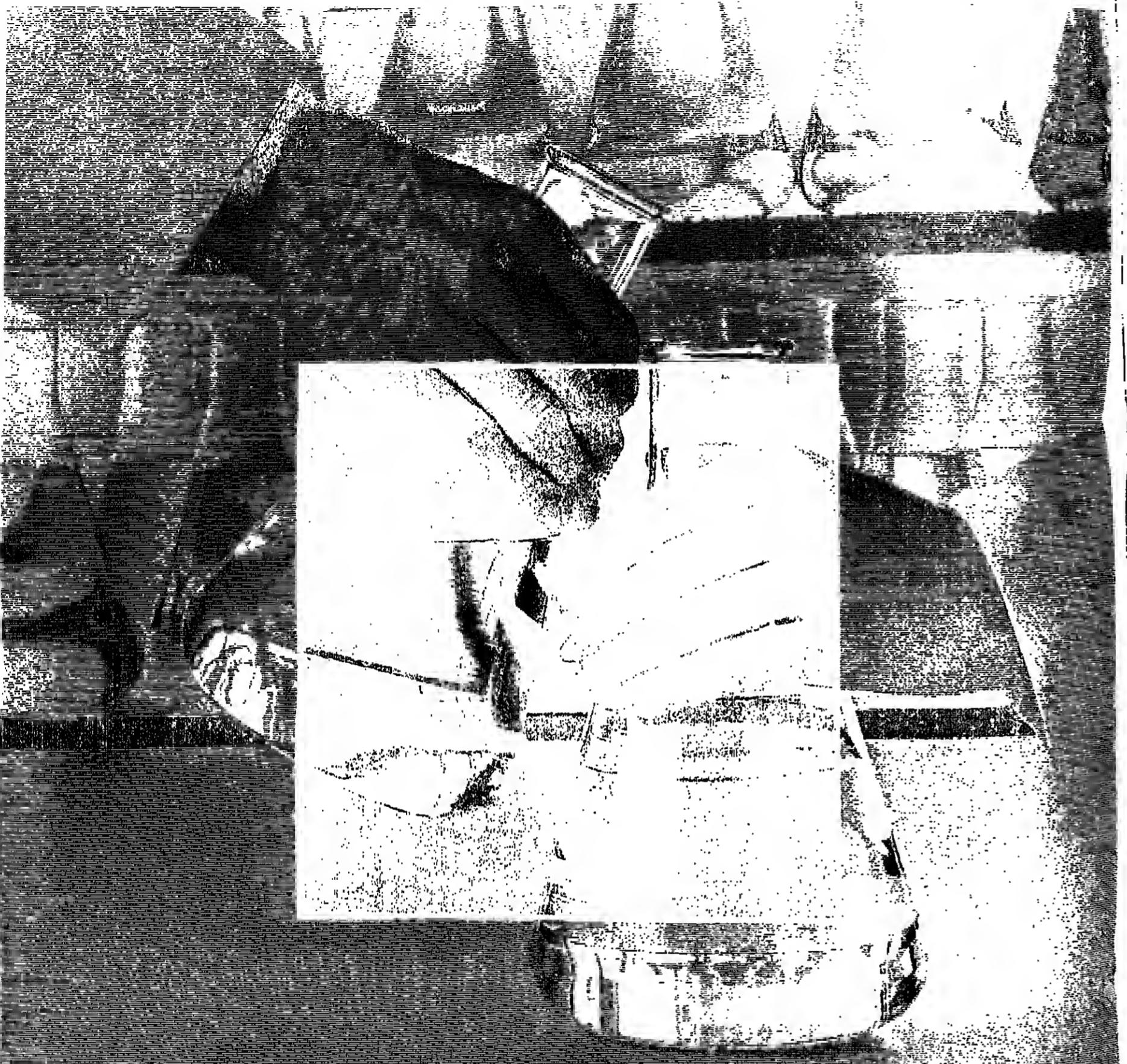
EPA estimates that the nine-year program will cost \$200 million. The agency has budgeted \$110 million toward the effort, with the fees expected to bring in an additional \$45 million.

That leaves a shortfall of \$45 million — a gap the Reagan Administration believes should be filled by industry. The registration fees on pesticide products are due in 1987.

In an effort to encourage companies to do so, the House

Continued on Page 70

Photo by AP Wirephoto



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The Little Chemical Giant

News Capsule

Du Pont Gets Drug Unit

E.I. du Pont de Nemours & Co. has completed its acquisition of the American Critical Care unit of Baxter Travenol, Inc. (CMR, 7/14/86, pg. 3). The unit has been renamed Du Pont Critical Care, Inc., and will operate as a subsidiary at its present headquarters near Waukegan, Ill.

Monsanto in Nylon Push

The fiber division of Monsanto Company will launch its new stain-resistant nylon carpet fiber during a series of three-day meetings beginning October 15 in Pensacola, Fla. About 500 major carpet retailers are expected to attend. R&D efforts on the fiber began in 1981, with evaluations having been run since early 1985 and production quantities have already been shipped to 14 major carpet producers.

Fungicide Unit Acquired

Pennwalt Corporation has acquired a dithiocarbamate fungicide production facility in northern Spain, owned jointly by E.I. du Pont de Nemours & Co. and Energia e Industrias Aragonesas SA. Terms of the acquisition were not disclosed. The facility will be used to supplement existing overseas production at Pennwalt's plant in Rotterdam.

Novo Opens Enzymes Plant

Novo Biochemical Industry Japan Ltd., a wholly-owned subsidiary of Denmark's Novo Industri AS, has opened its industrial enzymes production plant at the Ishikari Bay New Port Industry Complex in Hokkaido, Japan. Completion of the plant gives Novo six enzyme production facilities: three in Denmark, one in the USA and one in Switzerland.

Tax Cut Fosters Imports

A Conference Board study says tax cuts embedded in new tax-reform legislation will act to support the huge wave of imports into the US, further inhibiting any decline in the nation's \$150-billion trade deficit. The deficit is being fueled by massive real consumption, which totalled \$2.4 trillion in the second quarter, up 6.5 percent from the first quarter.

P.R. Facility Opens

PCM Corporation, a subsidiary of Berwind Industries, Inc., Waukegan, Ill., has started pharmaceutical packaging operations in Huaracan, Puerto Rico. The expansion follows one on the island by Key Pharmaceuticals, a major PCM customer. The new unit concentrates on blister strip packaging, as well as bottling of solid oral capsules and tablets.

Pharmacia Wheels, Deals

Pharmacia AB and Elektro-Neurologics, Inc., Fairfield, N.J., have closed a contract for ENI to purchase US distribution rights to Pharmacia's allergy and other diagnostic lines. ENI says it will realize \$10 million to \$15 million from the transaction this year. In another agreement, Pharmacia and Allergologisk Laboratorium AS of Denmark will coordinate operations within the allergy field.

Military Boosts Plastics

High-performance plastic materials for use by the US military will boost the value of plastic parts going to the market over the next few years, according to a new study by Business Communications Company, Stamford, Conn. A 13 percent year growth in value is projected to 1990.

Enzon Asks FDA Approval

Enzon, Inc., South Plainfield, N.J., has filed with Food & Drug Administration for approval to begin human trials using two of its modified enzymes — polyethylene glycol-superoxide dismutase and PEG-catalase.



Tall Oil Is Tracking The Drop in Pine Use

Availability of crude tall oil from the US's southern mills isn't going to increase over the next five years, so producers must look to recovery processes if the industry wants to increase supply, says David Wang, senior vice-president of International Paper Company.

Speaking before the Pulp Chemical Association's thirteenth international naval stores meeting in New York last week, the IP executive predicted reduced pine elements in each of the six major product categories which add up to at least 90 percent of southern paper mill production.

The pine component will be cut in half in both bleached board and newsprint and fall from 95 percent to 60 percent in linerboard, he says. Lower pine content due to substitution will impact on packaging papers, printing papers and market pulp.

As a result, Mr. Wang says an expected 2.5 to 3 percent annual growth in paper demand will be offset and will keep crude tall oil availability from southern mills at its current level of 900,000 tons per year.

"Given these structural constraints, the most promising avenue for increasing supply may reside in recovery," he says. He cites high levels of variability in CTO recovery, in terms of pounds of CTO per dry ton of pine, ranging from "the teens to the forties."

The reasons for the variability are highly mill-specific, and improved recovery gener-

ally requires changes in operation or equipment, or both," he says.

He asserts that in his own company's mill system, an estimated 20 percent improvement in recovery is "technically feasible," but he goes on to say that it is unclear whether "adequate financial incentives exist for this increment of recovery."

David Luke 3rd chairman and chief executive officer of Westvaco Corporation, said that the key to continued viability of tall oil in a highly competitive environment is an expanding commitment to technology.

"Technology will provide an answer, but only if we recognize that merely applying technology to our processes will not be enough. In my view, we have to steadfastly maintain our commitment to process technology, while at the same time increasing manifold our commitment to technology which will support innovation and market development by aggressive new product offerings from our field," he says.

Citing competition from petroleum derivatives and agricultural oils, now coming increasingly from less-developed parts of the world which vigorously push their products onto the world market, Mr. Luke emphasizes downstream products in the tall oil industry.

"Increased technical focus on products that are derivatives of our basic commodities has been a relatively recent occurrence in the tall oil industry...The time is now at hand. Continued on Page 19

FDA Okays Patch

Food & Drug Administration has approved a low-dose estradiol skin patch that some physicians think could vastly change the way millions of women are treated for menopausal symptoms.

The patch, to be marketed by Ciba-Geigy under the brand name "Estraderm" (estradiol transdermal system) is transparent and about the size of a silver dollar. It contains 17-hydroestradiol, which is identical to estrogen produced naturally before menopause.

Small amounts of estrogen are released

directly into the blood stream at a relatively constant and controlled rate, and the patch is considered the first pharmaceutical product to closely mimic a pre-menopausal woman's natural estrogen levels.

Most women now taking estrogen re-

placement therapy use estrogen pills, which are undesirable. Injections en-

do the same. Therefore, at times high amounts of these drugs are taken to achieve proper levels in the bloodstream. This, it's noted, can cause cyclical therapeutic blood levels, which are undesirable. Injections en-

do the same. However, according to Dr. Howard Judd, of UCLA's school of medicine, "the patch may avoid these problems while effectively relieving hot flashes and related menopausal symptoms," because the patch-delivered estrogen is not initially processed in the liver.

US Is Mulling New Curbs On Alachlor Corn Herbicide

Federal regulators say they are considering imposing additional restrictions on the use of alachlor to protect farmers and workers who come into direct contact with the chemical, the nation's most widely used corn and soybean herbicide.

Environmental Protection Agency began a special review of alachlor in January 1985 after test data linked the chemical with tumors in laboratory animals. Agency documents call alachlor "a probable human carcinogen."

Aalachlor, sold by Monsanto Chemical Company under the trade name "Lasso," is the largest herbicide by volume used in the US. About 98 percent of its use is for controlling weeds in corn, soybeans and peanuts. First registered in 1968, about 90 million pounds are used annually in this country.

Monsanto voluntarily cancelled its use on potatoes in November 1984 and EPA has imposed a number of labeling restrictions.

One EPA official in the agency's drinking water office has recommended that an immediate "emergency suspension" of all use of alachlor be considered because traces have been found in streams and groundwater supplies.

Monsanto believes "Lasso" does not pose unacceptable risks when used according to label instructions, he says.

in some intensive corn-growing areas of the Midwest, posing a potential threat to drinking water supplies.

Other agency officials, however, say a suspension is unlikely, but additional safeguards to protect applicators may be ordered.

Dr. John Moore, EPA's assistant administrator for pesticides and toxic substances, says aachlor has been found in groundwater in Nebraska and Iowa, and also has been detected in surface water in several locations from runoff, particularly in Iowa and Ohio.

But he says the available data indicate that relatively few drinking water sources have been contaminated by high concentrations of the chemical. Dr. Moore says EPA may announce a decision on alachlor as early as this week.

Monsanto says it remains confident that EPA's special review will support the continued use of alachlor. "There is absolutely no evidence that it is a human carcinogen," says a spokesman who also challenged the accuracy of EPA data indicating that alachlor has been found in high concentrations in some water supplies.

Monsanto believes "Lasso" does not pose unacceptable risks when used according to label instructions, he says.

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CHEMICAL MARKETING REPORTER

September 14, 1988

OILS, FATS & WAXES

TOFA Producers Are Looking To New Specialty Applications

Tall oil fatty acid producers must concentrate more on specialty chemical markets and less on general application markets if they are to maximize their profit margins, according to Nicholas Berchtold, president of Chemical Associates, Inc.

Mr. Berchtold, speaking at the thirteenth international naval stores meeting in New York last week, sponsored by the Pulp Chemicals Association, pointed to a high level of substitutability among lower-priced competing sources of fatty acids as a main reason for stressing specialty chemical markets.

Most industrial demand for fatty acids is readily answered by material derived from vegetable oils and tallow. "The market is mixed in commodity substitutability," he says. However, markets exist for new formulations of TOFA, as well as for more established TOFA products whose properties are unique to them, he says.

The TOFA products with the lowest degree of substitutability are oleic, linoleic, dimer acids, and C-21 dibasic acid, according to Mr. Berchtold.

These account for 50 percent of the TOFA market. It is this half, he says, which holds the most promise for increased financial gains for the industry.

VALUE-ADDED CHEMICALS

"TOFA producers should concentrate on dimer acids and other specialty chemicals that are downstream products," he says. Among these other chemicals, he cites the products of esterification, a process which further reacts tall oil into a value-added ester that becomes an application-specific specialty chemical.

Esterification is another process which yields specialty, generally proprietary materials. These areas are essential to a strong TOFA market, he says.

When tall oil fatty acids were first introduced in 1960, an aggressive pricing stance won the material a large share of the market, which had previously been dominated by oleic and soybean-derived fatty acids.

By 1972, production of TOFA was at a peak and the feeling in the tall oil market was that they had as much of the market share as they were going to get. Consequently, price was brought up significantly, according to Mr. Berchtold.

In the next couple of years, oleic became a better buy than TOFA, and the tall oil industry lost some of its business. By 1978, TOFA prices were forced to come down.

As energy costs rose in 1984, so did the

FRIDAY SPOT PRICES MARKET CLOSE SEPT. 19, 1988

CRUDE VEGETABLE OILS	
Coconut oil, NY	lb. .154
Corn oil, Pacific	lb. .144
Corn oil, Midwest	lb. .17
Cottonseed oil, Valley	lb. .144
Linseed oil, Minnesota	lb. .28
Palm oil, NY	lb. .114
Peanut oil, Southeast (restricted)	lb. .28
Soybean oil, Decatur	lb. .1330

REFD. VEGETABLE OILS	
Cocoanut oil, t.w., NY	lb. .10
Corn, jumbo tanks	lb. .2370
Cottonseed oil, jumbo tanks, NY	lb. .2375
Peanut oil, jumbo tanks, NY	lb. .3880
Soybean salad oil, NY	lb. .1853

OILMEALS	
Cottonseed, 14% bulk, Memphis	ton. \$125
Cotton, 14%, 34% bulk, Fargo	ton. \$105
Peanut, 50% bulk, Atlanta	ton. \$180
Soybean, interest, 44% bulk, Decatur	ton. \$158

FATS & GREASES	
Cream, white, choice, tanks, divd., NY	lb. .16
Cream, yellow, maximum 14%, 16% tanks	lb. .51
Tallow, loose, bulk tanks, NY	lb. .14
Tallow, medium, fancy, tanks, divd., NY	lb. .11
Tallow, medium, high, tanks, divd., NY	lb. .104

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September 14, 1988

CHEMICAL MARKETING REPORTER

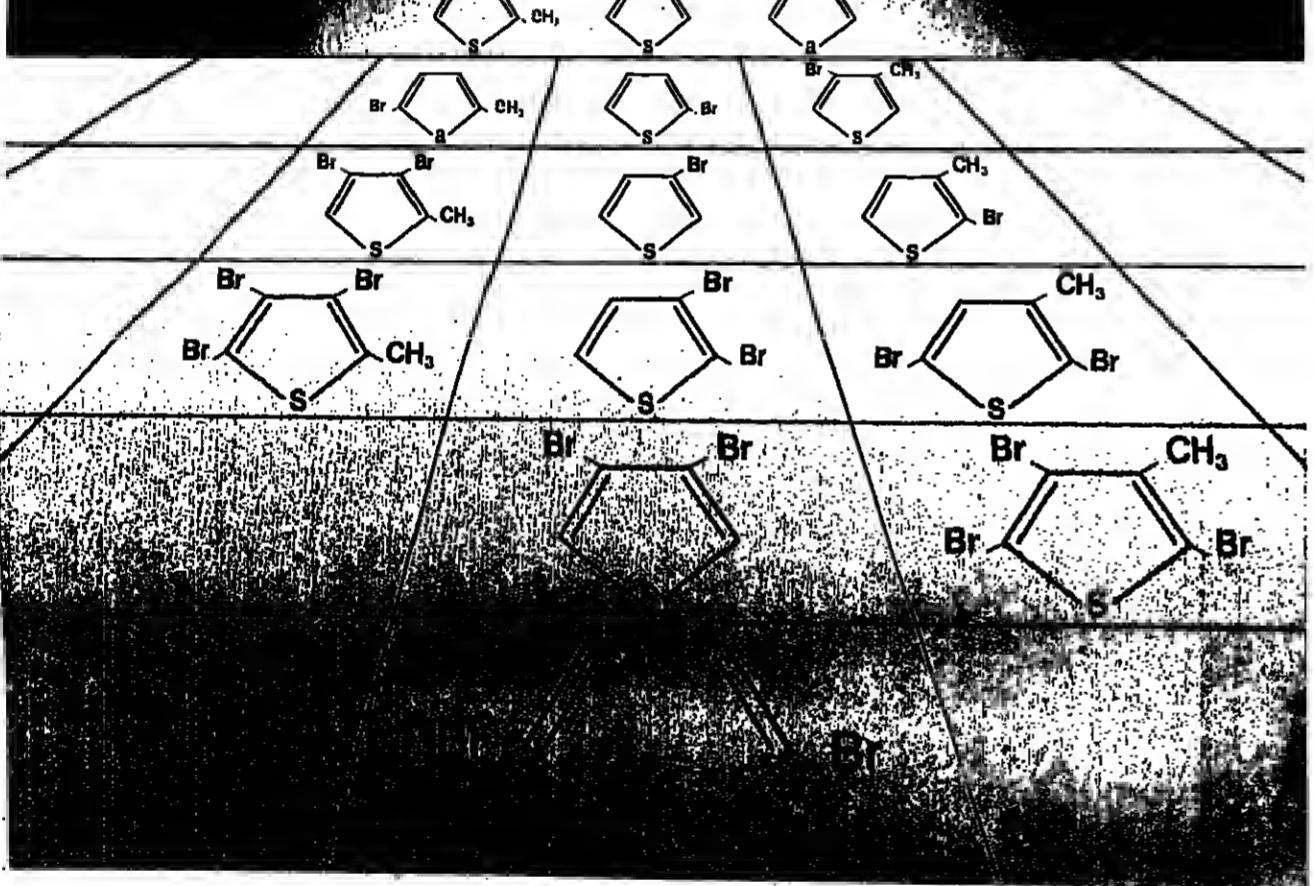
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OILS, FATS & WAXES

goes on to say that "the government tightened things further by giving a lot of oil away," referring to PL 480 shipments, designated for delivery by the end of this month to Pakistan, Bangladesh, and the Dominican Republic.

Once all of the refiners and processors are finished with their downtime, it is expected that ample quantities of crude soy oil will become available and the market will return to its soft position of several weeks ago.

FATS & GREASES

TALLOW — The tallow market is continuing its firming trend, fueled by good demand and some remaining shortness of material in the Midwest. Some traders are also attributing part of the firming to the anticipation of tenders from Mexico later this week.

Although the Chicago area has seen healthy interest in the spot market, some

dealers are having difficulty covering sales, due in part to slower production, sources say. The Eastern market, meanwhile, is also firmer due to good demand, with one trader there expecting the price to rise still further.

FISH OILS

MENHADENOIL — The price of herring quoted at 11c. per pound, crude, tankcar, western Atlantic coast, and f2c. per pound, at ports, same basis.

The market continues to be weak, with demand remaining at low levels. Japan, one of the main competitors of the US in menhaden oil sales, has been very quiet in the market, sources say. "Japan is still fishing, but they are covering their short sales before making any new offers," an industry source says. Their pull-out has not helped the market due to the rise in palm oil production, though.

Also hurting the menhaden oil market is the increasing substitution in Europe of palm oil for the fish oil. The trend to substitutes, which began last Spring when palm oil collapsed, includes the major markets of margarine and soaps.

Further frustrating the market is the fact that oil yields here this year have been high, outstripping those last year and creating a burdensome supply situation.

MISCELLANEOUS

COCOA BUTTER — The spot price of cocoa butter has risen to \$2.32 per pound. The increase in price reflects very strong cocoa prices, which have firmned out of concern over the condition of the African crop. Dry weather over the summer in the Ivory Coast and Ghana has caused some traders to worry about the health of the current crop, also contributing to the strong price of the weakness of the dollar, a source says.

Dow Completes Dioxin Study At Midland Site

A new study released by Dow Chemical Company indicates that men who may have been exposed to chlorinated dioxins in chemical production are have generally experienced death rates at or below those of a corresponding United States population.

A study group consisted of 2,192 Midland-based employees of the Dow Midland Division who had potential exposure to dioxins as a result of working with chlorinated pesticides and derivative products some time between 1937 and 1980. Their mortality experience was evaluated through 1982. About 15 percent of the group had the skin condition chloracne.

Results of the study will be presented next week at an international scientific symposium on chlorinated dioxins being held in Fukuoka, Japan. This research is an update of a previous dioxin health investigation released last year, the company says. In addition to focusing on 2,3,7,8-tetrachlorodibenzo-p-dioxin, considered by many to be the most toxic dioxin, the study evaluated potential effects of the higher chlorinated dioxins. A separate analysis was also done for that group of workers who had chloracne.

The major finding was a lack of association between dioxin exposure and mortality effects. In the total group, the total mortality and cancer death rates were not below expectation over the 40 plus years of study.

Furthermore, no specific type of cancer was significantly increased. Dow's small number of analyses suggested a possible association between exposure to hexa- to octachlorinated dioxins and the risk of the liver, but the interpretation is complicated because many of those who died of this disease had apparently died of other diseases.

While most turnarounds involve routine maintenance, one US unit, a 900-million-pound-per-year part of the Cosmar Company and Cosden, recently was forced to close unanticipated due to a mechanical problem.

Spokesman for Borg-Warner and Cosden say the unit will be out of operation for eight to 10 days following the shutdown September 10.

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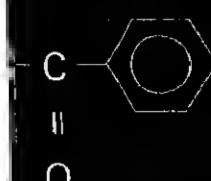
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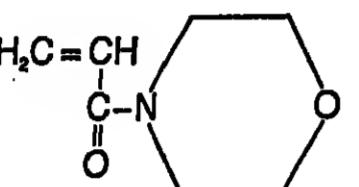
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Chemical Finance

American Home Buying Chesebrough Business

American Home Products Corporation, New York, has signed a definitive agreement to purchase the Hospital Products Division of Chesebrough-Pond's Inc. for \$260 million. Products include nutritional feeding and cardiopulmonary devices, thermometers, continence control products, treatments for wounds and various personal care items.

Cyanotech Shares Are Listed on NASDAQ

Trading has begun in the shares of Cyanotech Corporation on the automated quotation system of NASDAQ, which has become the nation's second largest and fastest growing securities market.

Dow, Great Lakes Boosts Dividends

Dow Chemical Company and Great Lakes Chemical Corporation have announced dividend increases on their common stocks. Dow's new dividend is 50 cents per share, up 5 cents, and payable October 30 to holders on September 30. Great Lakes' dividend is up 1 cent per share to 14 cents, payable October 20 to holders on October 1.

Vega Biotechnologies' Results Improve

Vega Biotechnologies Incorporated, Tucson, Ariz., improved its results markedly in the first fiscal quarter ended July 31. Sales were up 65 percent to \$1,140,000 from \$644,000 a year earlier, and the net loss decreased 60 percent to \$156,000 from \$384,000. Research for E.I. DuPont de Nemours & Co. accounted for \$219,000 of the increase in revenue and is expected to continue at that level throughout the remainder of the fiscal year.

ImmunoGenetics Divests Unit, Plans Acquisition

ImmunoGenetics, Inc., Vineland, N.J., has sold its "Surge-Cream" line of skin products to American International Industries, Hollywood, Calif., for \$2.75 million cash and secured notes. Meanwhile, ImmunoGenetics continues negotiations to acquire privately held pharmaceutical company that holds rights to some 60 ethical and dermatological preparations for humans and animals.

Montedison's Iniziativa Has Profit Increase

Iniziativa ME, T.A., the services sector of the Montedison Group, raised its net profit in the first half of 1986 to the equivalent of \$17.2 million from \$17.1 million a year earlier. Dividends from companies in which Iniziativa ME, T.A., holds an equity position declined to \$11.9 million from \$18.9 million a year earlier, reflecting a divestment.

Pantasote to Repurchase 1.6 Million Shares of Stock

Pantasote Inc., Greenwich, Conn., has entered into an agreement to repurchase 1.6 million shares of its common stock from the Wyman family for an aggregate price of \$1 per share, totaling \$1.6 million. In cash, plus shares of convertible preferred stock with an aggregate liquidation value of \$3.2 million and a cumulative dividend of 8 percent per year.

Research-Cottrell Declares Dividend

Directors of Research-Cottrell Inc., a diversified engineering company based in Somerville, N.J., have declared a dividend of 8 cents per pound on the capital stock.

Shell Transport Raises Dividend 8 Percent

Directors of Shell Transport & Trading Company (PLT), London, England, have declared an interim dividend of 64 pence per New York share (one New York share equals four ordinary shares), an increase of 8 percent over 50 pence a year earlier, payable November 17 to holders on October 2. The amount to be paid to holders in US currency will depend upon the exchange rate on November 8. At the current rate of \$1.40 the dividend would be \$1.13 per share.

Imperial Adhesives Acquires S-W Business

Imperial Adhesives, Inc., Cincinnati, Ohio, has acquired the industrial adhesives business of Sherwin-Williams Company, including customer lists, formulas and related technology, effective September 1.

Standard Oil to Issue \$150 Million of Notes

Standard Oil Company, Cleveland, Ohio, has agreed to issue \$150 million of 9 percent, non-callable, 7-year notes through Sunbeam Brothers Incorporated, under an existing shelf registration. The notes will be issued at 100 percent, and proceeds will be used for general corporate purposes.

Syntex Sells Dental Business to New Company

Syntex Corporation, Palo Alto, Calif., has signed a contract for the sale of its dental products business, Syntex Dental Products Inc., to a newly formed company, Dental Products Corporation, controlled by Raymond G. Pardue, Mr. Pardue is a private investor with interests in a number of manufacturing businesses, including Chayre, Virginia Inc., a dental equipment manufacturer. The sale is expected to be consummated in late October.

Alcoa to Redeem Outstanding 13 1/2% Pct. Debentures

Aluminum Company of America will redeem all of its outstanding 13 1/2 percent, sinking fund debentures due 2011 at a price of 110.446 percent of the principal amount plus accrued interest to October 17, 1986. The bonds may be redeemed at \$1,000 per \$1,000 of principal by the Company of New York and/or Pittsburgh National Bank.

Eli Lilly Applies for Tokyo Stock Listing

Eli Lilly & Co., Indianapolis, Ind., has applied to list its common stock on the Tokyo Stock Exchange. Nikko Securities Company is sponsoring the listing, which is expected to be effective in the fourth quarter. Lilly entered the Japanese market in 1960 and is in that country through several subsidiaries and joint ventures.

IMS International Declares Dividend of 3 Cents

IMS International Inc., New York-based multinational provider of medical and personal care services, including market research, medical publications and toxicological testing, said its board of directors has declared a 3 cent per share on the company's common stock, payable September 30, 1986.

AROMATICS

Continued from Page 13

has slackened a bit since the first half of the year, and are concerned about growth prospects for next year.

It is believed that the new tax structure, if implemented, will reduce the incentive for commercial construction, and could lead to a flat rate of growth in 1987.

Further complicating the picture in 1987 will be the dabbling of BASF Wyandotte Corporation's Geismar, La. plant, from 100 million to 155 million pounds per year.

The company says it expects to be operating at the highest capacity by mid-1987. Spokesmen note that when the plant came on stream earlier in the decade, much of the equipment necessary to operate at 155 million pounds per year was already in place.

The company says that, while some equipment modifications may be needed before the plant can begin operating at the higher rate, the mid-1987 target date represents not the length of time required to make the

change but rather the company's schedule at present.

An earlier date for the startup of the additional capacity is not ruled out, and some industry sources say they expect it to happen closer to the first of the year.

Producers note that a portion of BASF's additional product will likely be used to supply the parent company in Germany. "They have had some problems over there with downtime, and the market is quite active," comments one producer.

It is observed that export demand for MDI is fairly strong, and operating difficulties in Europe have contributed to making the market fairly tight worldwide. US product is said to be moving primarily to Canada, Mexico, South America, and the Far East.

PHTHALIC ANHYDRIDE — Koppers Company, Inc. and USS Chemicals say they are raising prices for the fourth quarter. Effective October 1, Koppers is moving up 1c. per pound on selling prices, and USS Chemicals is reducing all competitive allowances on molten and flake material by 2c. per pound.

USS Chemicals attributes the change to rising feedstock costs and "the need to restore an equitable return to the product." A week earlier, BASF Wyandotte Corporation and Stepan Company announced 1c. per pound price increases on molten and flake material for October 1.

INTERMEDIATES

Benzolic Acid

Benzotrichloride

Benzoyl Chloride

Benzyl Alcohol

Benzyl Chloride

Benzylidene Acetone

Meta-Nitrobenzaldehyde

Ortho-Nitrobenzaldehyde

CATALYSTS

Paramenthane

Hydroperoxide (PMHP)

Pinane Hydroperoxide (PHP)

INHIBITORS

Potassium Benzoate

Sodium Benzoate

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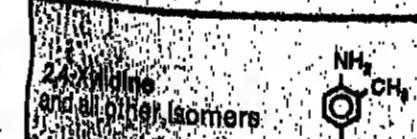
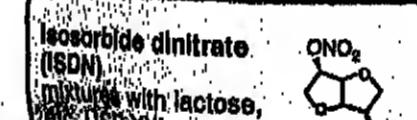
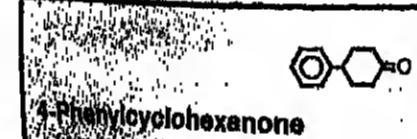
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Hazardous Material Accidents To Be Counteracted by Computer

The chemical industry last week unveiled a computerized information system to help fire departments and other emergency services respond to accidents involving hazardous materials.

The system, called HIT — Hazard Information Transmission — was developed for the industry's fifteen-year-old Chemical Transportation Emergency Center (Chemtree).

Chemtree is a 24-hour emergency hotline service. According to Chemical Manufacturers Association, it gives firefighters, hazards and appropriate actions to take to deal with fires, spills or leaks of the products. The HIT system was designed to speed access to the information maintained by Chemtree.

The heart of the HIT system is a computer

program developed for the CTA by AT&T. Information on more than 1,700 common chemicals — generally chemicals produced and shipped in large quantities in the United States — has been put into the system. Eventually, data on more than 4,000 chemicals will be maintained in the system. CTA says.

The system gives emergency services personnel at the scene of an accident a hard copy printout of the information maintained by Chemtree. Until now, communication between the hotlines and personnel at the scene of an accident has been oral, via telephone lines.

CMA president Robert A. Roland says a new computer link between Chemtree and emergency services around the country allows information to be relayed much more quickly and accurately. In addition, relay more information."

The system has been tested in six areas: Chicago; Jacksonville, Fla.; Fort Collins, Colo.; Fullerton and Costa, Calif.; and Prince George's County, Md.

Mr. Roland says the industry began in establishing Chemtree 15 years ago "to give quick, accurate information to emergency service personnel." And that hasn't changed, he says.

Although Chemtree was originally established to assist in transportation issues, last year Chemtree's services were expanded to provide information for non-transportation emergencies as well. Chemtree is based in CMA's headquarters in Washington.

Chemtree is one of four programs to make up the industry-funded National Chemical Response and Information Center, which was established in early 1985.

The other elements of the NCRIC are:

The Chemical Referral Center. The center, through a toll-free number, 800-262-3200, is a source for non-emergency information on chemicals and their hazards. The center, which began operation in December 1985, has responded to more than 6,700 requests for information.

The Chemnet. This nationwide, mutual-aid system is made up of 213 emergency response teams: 163 are chemical industry teams; 50 are private contractor teams. The teams are available to provide technical assistance at the scene of transportation accidents.

The Chemical Referral Center and Chemnet both have emergency response training programs.

ALIPHATIC ORGANICS

Linear Olefins

Continued from Page 3

density polyethylene is expected to reach 34 billion pounds this year, 1990 demand will rise modestly to 35 billion pounds according to industry forecasters.

However, continued inroads made by LDPE into LDPE will bring linear material up from its current 20 percent share of the demand to a 30 percent share of the requirement by 1990.

"New LDPE plants being built around the world and higher operating rates at existing plants will spur strong growth through 1990," says one US marketer.

Demand growth, as strong as it is, has been moderated by the cost of LDPE plants, says the marketer. Polymer producers will maximize their use of blends in order to minimize costs while taking advantage of the properties offered by the linear polymer.

While linear olefins demand growth due to increased LDPE requirements will affect C₄ through C₁₀ olefins, C₁₂ through C₁₆ cuts, used primarily in detergent applications, should see growth only in the 2 to 3 percent range.

Producers have been looking to underdeveloped nations to expand their use of detergents based on olefin raw materials. However, growth has so far been stemmed by the high cost of olefin-based facilities.

In the US, strong demand for linear olefins has aided prices. First quarter price increases of 2½ cents per pound on average have been successful, according to sources.

Current list prices are 28½ cents per pound for C₄ material and 40 cents to 46½ cents per pound for C₆ through C₁₆ materials. Multiple cuts of higher than C₂₀ material are list priced between 39 cents and 40 cents per pound.

ACRYLATES — Rohm and Haas says it will raise selling prices on acrylic acid, (glacial and flocculant grade), n-butyl acrylate and ethyl acrylate by 3¢ per pound on October 1.

New selling prices, according to the company, will be 49.5¢ per pound for n-butyl acrylate, 47.5¢ per pound for ethyl acrylate, 46¢ per pound for glacial acrylic acid and 51.3¢ per pound for flocculant grade acrylic acid.

All prices are f.o.b. plant and minimum freight allowed.

Brake Fluids — ICI Americas says it will increase all brake fluid prices by 25¢ per gallon on October 1. The price increase is the result of increasing volume and decreasing availability of ethylene glycol ethers, the major raw material used in brake fluids, according to ICI.

Oxo Alcohols — Major producers of oxo alcohols have announced price increases of 2¢ per pound, not to exceed current list values, effective October 1.

The only companies to change list levels are Tenn-USS which makes only the 2-EH oxo-alcohol and Calanese which makes only the butanols. Tenn-USS will increase its 2-EH list level from 32¢ to 34¢ per pound on October 1 and Calanese will revise its list prices to 31¢ per pound for n-butanol and 28¢ per pound for iso-butanol.

ALIPHATIC ORGANIC EXPORTS: JULY

BUREAU OF CENSUS FIGURES IN POUNDS ON THE KEY ALIPHATICS

	JULY	JUNE
	QUANTITY	\$ VALUE
Acetic Acid...	2,758,584	825,552
Acrylonitrile...	18,887,929	3,081,618
Acrylic Acid...	62,186,004	1,405,180
Acrylate...	8,480,187	2,025,582
Benzene...	16,200,193	21,358,560
Butyl Acetate...	17,750,581	8,788,897
Cyclohexane...	1,944,307	3,678,988
Chlorinated Hydrocarbons...	1,524,581	784,481
Ethanol...	4,882,880	1,981,196
Ethyl Acetate...	18,181,032	6,740,344
Ethylene...	2,708,389	8,124,713
Ethylene Chloride...	441,325	884,800
Ethylene Glycol...	88,078,784	8,834,280
Formaldehyde...	38,116,001	6,146,831
Glycine (Crude)...	1,028,488	44,907,551
Glycine (Refined)...	135,546	1,007,518
Isobutane...	78,023	551,016
Isobutyl Alcohol...	1,034,602	369,000
Isobutyl Chloride...	6,272,400	3,164,556
Methanol...	5,274,000	6,025,018
Methyl Acetate...	4,426,189	1,945,018
Methyl Acrylate...	4,239,419	7,445,481
Methyl Chloride...	6,885,492	3,298,265
Perchloroethylene...	12,567,453	8,168,017
Polyethylene Glycol...	2,084,082	238,921
Propylene Glycol...	698,884	686,781
Propylene Alcohol...	14,343,983	8,807,087
Propylene Glycol...	15,405,802	2,638,284
Propylene Oxide...	11,182,533	3,832,001
Propylene Oxide...	7,682,732	2,794,087
Vinyl Acetate...	7,875,764	2,002,855
Vinyl Chloride...	86,147,686	12,451,280
Vinyl Chloride...	109,866,344	26,220,803
		69,823,731
		10,404,543

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DRUGS & FINE CHEMICALS

Sulfamethazine Demand Slumping Amid Growing Residue Concern

Sulfamethazine depression continues to deepen, and few observers are optimistic that the situation will change soon.

Sulfamethazine's cost has eroded for about two years, but most sources believe the price has bottomed out between \$9 and \$10 per kilogram. About two years ago, the price was between \$12.00 and \$12.50 per kilogram.

During the past year, a decrease in demand had caused an oversupply, helping drive down pricing. Now, because of oversupply, companies are existing off inventory, and less material is being imported.

January through July import figures show a 35 percent drop in imports, compared to the same period in 1985. About 955,000 pounds have come to the US through July, compared to about 1.5 million pounds through July 1985.

Almost all exporters to the US have sent substantially less this year. Yugoslav, the largest exporter, has sent 27 percent less sulfamethazine here through July.

China's total has dropped by 56 percent, Germany's by 47 percent, and Hungary's by 26 percent.

DENMARK INCREASES EXPORTS

Only Denmark has increased its exports this year, sending 11 percent more. One source says this is because the Danish material is especially suitable for veterinary purposes, such as horse pills. This segment, although minor, is not shrinking, according to the source.

Sulfamethazine's major use, however, as a feed additive in swine and cattle feeds, is shrinking. Some observers cite the popularity of poultry and fish, but most admit that concern about residue is the main factor.

Residue problems have been talked about for years, but sources say that recently the concern has grown partly because of increased media exposure, which one source terms "hysterical." Farmers should not slaughter an animal until 10 to 15 days after it has consumed sulfamethazine, say observers, because if the slaughter is done in advance, there is often a sulfamethazine residue, which causes allergic reactions in some people.

A Food & Drug Administration spokesman says that because some people react to the residue, "we can't take chances." The legal limit of allowed residue is 0.1 part per million.

Carcasses are routinely examined, and those with high residue levels are discarded. The spokesman says that, generally, samples of the carcass are taken, and the rest of the carcass is allowed to continue being processed. If the sample has high residue levels, the rest of the carcass is recalled.

Sulfamethazine sources say they are

equally concerned about residue problems, but do have some complaints. One source, for example, insists that "the government has residue levels at (a) ridiculous rate." Another source says that, because of publicity, the residue problem is "becoming a political, not a scientific issue."

He further notes that "the FDA is under a

PRICES TRENDLINES

WEEK ENDING SEPT. 19, 1986

CHANGES/UP

None

CHANGES/DOWN

None

DRUGS INDEX

The Drugs & Fine Chemicals Index reflects the prices of 10 representative materials in this sector and the quantity of each produced in 1985.

Sept. 19, 1986 211.18

Sept. 12, 1986 211.18

Aug. 22, 1986 211.18

Sept. 20, 1985 211.18

Chemical Prices Start on Page 52

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DRUG & FINE CHEMICAL EXPORTS: JULY

BUREAU OF CENSUS FIGURES ON THE KEY DRUGS.

	JULY QUANTITY	\$ VALUE	JUNE QUANTITY	\$ VALUE
Antibiotics:				
Ampicillin and salts, bulk	28,729	1,289,722	17,761	1,248,769
Penicillin	94,498	2,818,469	46,996	6,325,361
Penicillin HSP	15,223,852	3,767,007	4,998,149	1,044,447
Penicillin, G Salts, Bulk	1,426,583			
Tetracycline	199,148	3,751,029	1,671,053	6,651,238
Tetracycline, G Salts, Bulk	1,278	1,602,654		
Aspirin	1,278	437,388	312,778	563,454
Caffeine and deriv.	234,308	41,482	76,444	129,818
Citic acid	8,400	1,043,118	850,046	896,722
Opium alkaloids and deriv.	913,887	2,043,118	1,000,000	1,000,000
Sulfamethazine	248	27,517	1,188	167,659
Hormones:				
Androsterone, naph.	5,456	4,935,616	4,956	6,782,760
Androsterone, naph.	10,881	2,953,620	4,956	6,265,201
Progesterone	1,839	2,785,703	4,210	4,719,707
Progesterone and esters salts	1,199	2,242,238	15,428	3,470,705
Steroid hormones and synthesis	10,199	1,017,614	10,059	407,671
Vitamins:				
Ascorbic Acid	191,829	753,716	118,809	563,636
Vitamin A and Pro-vitamin A, bulk	100,860	610,000	104,128	196,966
Vitamin B	1,248	5,550	5,225	4,221
Vitamin B	1,442	13,534	2,056	24,575
Vitamin B	8,443	983,010	74,343	762,182
Vitamin B	8,443	92,065	220	24,575
Vitamin C and panthenic acid	6,248	22,065	23,334	78,958
Vitamin E and niacinamide	62,722	165,495	23,334	78,958
Vitamins, hapt.	221,819	1,411,527	100,000	816,532

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DRUGS & FINE CHEMS

ing the import of butylated hydroxyanisole (BHA) have thus far been unsuccessful.

BHA, as well as TBHQ, have been prevented from entering Japan for many years, because of concern that they may be carcinogenic. However, early in 1986 some producers speculated that by September, the position may be changed. This has not happened.

And, even if it eventually does happen, so-called acceptance is bound to be slow in coming. The talk of acceptance has come about recently because of the findings by some Japanese scientists, who approve usage of the antioxidant.

The two domestic sources of BHA, Eastman Chemical Products, Inc., and UOP, Inc., account for almost all domestic requirements. One of the companies carries list prices of \$8.55 per pound for 5,000 pounds and more, \$8.80 per pound for 1,000 to 5,000 pounds, and \$8.90 per pound for 500 to 1,000 pounds. These prices are called stable, and are not expected to change.

ERYTHROMYCIN — Abbott Laboratories' erythromycin antibiotic "PCE" has received Food & Drug Administration approval. The approval came in early September, and Abbott has already begun to market the product.

"PCE," which stands for polymer-coated erythromycin, was developed to provide rapid absorption of erythromycin and at the same time minimize stomach acid. Erythromycin is used for bacterial infections, and especially the treatment of respiratory infections.

A spokesman notes that "PCE's" main advantage is that the polymer coating on the erythromycin particles protects from stomach acid. The spokesman estimates the worldwide erythromycin market to be about \$300 million. The list price of "PCE" is \$21.80 for 80 tablets, to pharmacies.

MEDICINAL PRODUCTION — Aspirin production rose by about 20 percent in second quarter 1986, compared to the first quarter, according to US International Trade Commission. Production was 7,125,000 pounds, compared to the first quarter's total of 5,830,000 pounds. However, this second quarter figure represents a slight drop from the 7,196,000 pounds produced in second quarter 1985. Likewise, the production total for the first two quarters of 1986 was 12,955,000 pounds, down from 14,758,000 pounds for 1985.

Meanwhile, choline chloride production was up about four percent in the second quarter, rising to 13,559,000 pounds, up from the first quarter figure of 13,021,000 pounds. The

second quarter figure is up from the first quarter of 1985's 11,352,000 pounds. Production for the first two quarters is also up from what it was in 1985. Through second quarter 1986, 26,580,000 pounds had been produced, compared to the 1985 total of 24,710,000 pounds.

MSG — Chell Sugar Company, a major source of monosodium glutamate from Korea, is increasing its export price to the US by five cents per pound. The increase is said to take effect immediately.

According to an importer of MSG, Chell is the US's largest source of Korean produced MSG. Meanwhile, spot prices for MSG are firm, and further increases are expected with contracts or renegotiated after January 1.

Conoco, Nippon Form Venture

Conoco and Nippon Mining Company Ltd. of Tokyo will join in a \$135 million joint exploration venture on selected Conoco acreage in the US and the Gulf of Mexico. The venture is the first with a Japanese firm for the North American exploration arm of Conoco.

Conoco, a subsidiary of Elf du Pétrole de Nîmes & Cu., will be the operator of the program, which calls for about 30 exploratory wells to be drilled in Texas, Louisiana, Colorado, Montana, Alabama and other states.

Six of the wells will be onshore and the remainder will explore offshore areas. The program also includes leasehold acquisitions and seismic activities.

"We expect to drill the first well in the Gulf of Mexico's Green Canyon area," said Max G. Pitcher, vice-president of Conoco's North American exploration operations. Nippon Mining will open an office in the Houston area as a result of the agreement. Since 1968, Conoco and Nippon Mining have been partners in a petrochemical manufacturing facility in Japan.

The agreement, signed last week by Pitcher and Takashi Sakamoto, managing director of Nippon Mining, is expected to bring employment to drilling contractors and others in the five state area.

ORGANICS TECHNOLOGIES, INC.

MATERIALS LIQUIDATION

Cat #	Item	Qnt.	Amt.
0901	acetoxy acetone	700 kg	
1011	4-amino uracil	100 kg	
1012	uracil	80 kg	
1024	4,5-diamino uracil	100 kg	
1025	4,6-dihydroxy-2-mercapto-4,5,6-triamino pyrimidine	25 kg	
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Canada Pact Could Receive Chemical Assent

The US chemical industry would support a free trade agreement with Canada if certain "fair and equitable conditions" can be met, an industry trade expert says.

Myron T. Foveaux, trade and economic policy advisor for the Chemical Manufacturers Association, told representatives of the Office of the United States Trade Representative these conditions include:

• Balanced benefits in chemical concessions to both the US and Canada. Currently, Mr. Foveaux says, "US average bilateral trade weighted chemical tariffs on Canadian imports are less than half those on US exports to Canada."

• Non-tariff trade barriers, such as inadequate protection of intellectual property rights, must be corrected, he says. "Recently announced changes in Canadian drug laws do not adequately address the problem," he adds.

• US import remedy laws and procedures shouldn't be suspended under any agreement with Canada.

• There should be an adequate and binding dispute settlement provision, Mr. Foveaux says, "including firm limits and provision for private sector input."

Mr. Foveaux explains that this country's chemical industry exports are \$22 billion annually, or about 10 percent of the industry's total sales.

"Although it is one of the few industries still providing a trade surplus to the nation's overall growing trade deficit, that surplus is decreasing annually," Mr. Foveaux notes. "And the Department of Commerce estimates the chemical trade surplus will diminish again this year." US chemical trade with Canada leads all other countries.

The Office of Chemical Industry Trade Advisors is a coalition made up of Chemical Manufacturers Association, Synthetic Organic Chemical Manufacturers Association, Society of the Plastics Industries and the National Agricultural Chemicals Association.

Roche Sues

Continued from Page 5

The court in August, Amgen's brief asked the court to determine that its own production of a biologically engineered interleukin-2 product does not infringe Cetus's patents.

Cetus says it holds the only US patents on interleukin-2 and its analogs made by genetic engineering. "By seeking a declaration that it was not infringing Cetus' patents, Amgen has revealed its uncertainty about its own position," claims Robert A. Fildes, president and chief executive officer of Cetus.

"Proleukin" interleukin-2, an analog form of interleukin-2 created by Cetus is currently in advanced human clinical studies around the US.

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Formaldehyde Makers

Continued from Page 7

Department of Housing & Urban Development.

Eventually, overlapping jurisdictions will be eliminated as the agencies work out their own territories, but meanwhile, industry spokesmen must deal with all four, at considerable expense of time and funds.

Mr. Howlett noted that OSHA, in the rules its people are preparing, has failed to make any distinction between long-term (a full shift) and short-term exposure to formaldehyde to factories. The Formaldehyde Institute has determined that 2 parts per million would be a sufficiently low limit for batch operations in which workers are exposed no more than one hour. Existing law, he said, allows 10 parts per million, as compared with 3 parts per million for full-shift exposure.

The Institute, Mr. Howlett added, has approved OSHA's plan to establish "action levels." Under this proposed rule, if a plant's emissions are at only half of the permitted level, OSHA uses a number of monitoring and reporting requirements.

OSHA had expected its final rule to be promulgated in September of 1987, but Mr. Howlett believes that the date will be pushed back to January 1988, based on his previous experience with the agency.

EPA had been working on rules for workers in factories, but it will probably bow out now that OSHA is far along in its rule making, Mr. Howlett said.

EPA also has approached the problem of formaldehyde emissions from building products in mobile homes, but again, it has the option of deferring to HUD in this area, since the latter has already promulgated stringent standards for homes.

Mr. Howlett noted that most of the hard-

wood plywood used in the US is now made in Indonesia, the Philippines and other Asian states. This once large market for US-produced formaldehyde (as glue) has been replaced by the growing market for particle board as a replacement for wood, he said. Some 10 percent of US particle boards used in mobile homes, 20 percent in conventional housing and 70 percent in industrial outlets, mostly for furniture, in which particle board is being increasingly used as replacement for wood.

Dr. Hayes questioned the scientific methods of a study by Dr. Thomas L. Vaughn and associates at the University of Washington in Seattle, which claimed to find a significant correlation between exposure to formaldehyde and development of cancer. He said most of the data were based on interviews of survivors of workers who had already died, and that there is no way to evaluate the accuracy or objectivity of such retrospective testimony. "The Vaughn study is open to a lot of questions," Dr. Hayes said.

John F. Murray, president of the Institute, and Edward J. Stana, director of public affairs, said the Institute may propose the convening of a blue ribbon scientific panel to review the data and draw its own conclusions.

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Tax Reform to Worsen Deficit, Says NAM's Chief Economist

Comprehensive tax reform legislation currently before Congress "will worsen the US trade deficit and seriously undermine the competitiveness of US firms," a spokesman for the nation's manufacturers charged last week.

Jerry J. Jasinski, executive vice-president and chief economist for the National Association of Manufacturers, told the joint economic committee the tax reform proposal will have both positive and negative effects on the economy and competitiveness.

"Neutral" tax reform is a misnomer when viewed on the tax treatment of income and consumption, Mr. Jasinski adds.

"The tax bill will move the tax system even further away from taxation of consumption and will further penalize savings and investment. The redistribution of \$120 billion in taxes from individuals to business will only further stimulate consumption, thereby raising the demand for imports and pushing US trade further into a hole," he says.

Congressional aides worked out the final details of the tax bill last week in preparation for a final vote in the House, perhaps this week, and later in the Senate. The outlines of the sweeping measure were agreed to by House and Senate negotiators last month.

"The condition of the overall economy is of great importance in determining performance in international markets," Mr. Jasinski notes.

"In this respect, based on net exports, the trade deficit feeds back into GNP growth, but at the same time it is figured partially on the level of domestic consumption of imports, which depends on the growth in GNP."

"Thus, certain general economic consider-

ations, like the possibility of recession, or implications for interest rates and the exchange rate, will influence the size of the trade deficit," he says.

Mr. Jasinski also says tax reform will raise the cost of capital by large magnitudes, raising the cost of production for manufacturers with direct foreign competition. He claims this increase in the cost of capital will lower productivity growth, thereby raising unit labor costs.

"The major positive elements of the bill include substantial tax rate reductions on individuals and businesses paying high tax rates," he testified.

"The major negatives are that revenue losses are made up primarily by removing incentives for investment, with the result that the burden of taxes will be shifted primarily onto capital intensive manufacturing firms that are heavily exposed to international competition."

The NAM economist said each piece of the reform equation — positive and negative — is inextricably tied to the next, and that each must be viewed as part of the economic whole.

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US Textile Imports Are Cited As Part of 'Bigger' Problem

The US import problem is "a catastrophe, not just for the domestic industry, but for America as well," according to Robert G. Laddlaw, first vice-president of the American Textile Manufacturers Institute, who maintains that at this point the US is being asked to provide fuel for economic growth in the rest of the world through loans, investment or trade.

Speaking at the 1986 annual conference of the International Textile Manufacturers Federation in Helsinki, Finland, Mr. Laddlaw told members, "there is nothing fair, equitable, orderly or even rational about the current trend of textile and clothing imports into our market."

"While our concerns may to many seem parochial and unduly protectionist, let me hasten to point out that they are merely reflective of much wider and deeper problems. Just as all 166 countries exporting textiles and garments to the US cannot each have 1 percent of our market...so, too, can the world's trading system and the free world's entire economy no longer endure the imbalances that are currently straining them to their very limits," he says.

"We cannot make any more loans until we start collecting on the ones we have already made," Mr. Laddlaw adds. "Our manufacturing industries cannot make any more investments because they are having a hard time generating the cash flow to do so and we can no longer afford to donate \$170 billion annually — this year's projected trade deficit — to the rest of the world's economies."

"Textile and apparel imports into our home market reached new record levels during 1985 — as they have for each of the last ten years — and are soaring to even greater heights this year."

Last year, Mr. Laddlaw noted, total imports were 13.6 billion square yards, 10.8 billion yards of products covered under the multifiber arrangement — cotton, wool and man-made fiber — and 2.8 billion yards worth of imports formerly outside the reach of the multifiber arrangement."

He says that current import levels repre-

sent more than 250,000 lost job opportunities for American workers. "Our trade deficit in textiles and clothing is running at an annual rate of \$20 billion."

Mr. Laddlaw says that the American textile industry remains "determined not to stand by and allow government bureaucrats to export the American standard of living."

"We in ATMI believe that the American people, speaking and acting through their Congress, will not allow that which has made the United States the most powerful nation on earth — a strong manufacturing industry — to be eroded away."

Phosphazene Patents Filed

Polymeric "tools" for a broad variety of industrial tasks are described in new US and foreign patent applications just filed by Research Corporation, the Tucson-based foundation for the advancement of science and technology.

Developed by Drs. Harry R. Allcock and Paul E. Austin at Penn State, the "tools" are macromolecules, members of a new class of water-soluble polymers with potential use in a multitude of applications.

Known as polyphosphazenes — technically poly(methylalkoxyalkyldi) phosphazene — the polymers may find application in the controlled-release delivery of drugs, fertilizers, pesticides and other compounds.

Polyphosphazene polymers are also said to be promising as foam control agents for the manufacture of paint, paper and surfactants, for example, and in the fermentation-based manufacture of antibiotics and foodstuffs. Still other applications are pending in food processing and water purification.

The polymers are reported especially suitable for controlled release of pharmaceuticals in the body because of their biocompatibility and stability (they could be designed to slowly dissolve in the gastrointestinal tract, hydrating into harmless small molecules).

Acid Rain Legislation Unlikely As Congress Nears Recess

Supporters of an industry-opposed plan to control emissions linked to acid rain conceded virtual defeat last week in their efforts to push the controversial legislation through Congress in 1986.

"With the few weeks we have left in this session, it's unlikely we can pass an acid rain control law this year," says Rep. Henry Waxman, (D-Calif.) chairman of the House energy and commerce health subcommittee. Congress plans to adjourn for the year on October 3.

The full Energy and Commerce Committee met twice to consider the Waxman bill just before the August recess, but opponents used a variety of procedural tactics to stall action, such as objecting to the panel meeting while the House was under the five-minute rule.

In the Senate, Sen. Robert Stafford, (R-Vt.) chairman of the Environment and Public Works Committee, says his panel is ready to send acid rain legislation to the floor, but will delay action until there is movement in the House.

"The cards are clearly stacked against getting anything done," says a spokesman for the National Audubon Society, one of many environmental organizations backing the legislation.

The bill would give Environmental Protection Agency and the states broad discretion in regulating emissions of sulfur dioxide and nitrogen oxide, considered by some scientists to be acid rain precursors.

Of special interest to the refining and petrochemical industries, the bill calls for emissions reductions from industrial processes, and for reducing the sulfur content of diesel fuel.

Peter Sipple, manager of energy policy for Air Products & Chemicals, Inc., has testified

the bill would cause major industry expenses from fuel switching, increased transportation costs, and capital costs from installing scrubbers.

He also points out that the bill recommends subsidization of major residential rate increases at the expense of business.

According to the Congressional Office of Technology Assessment, the cost of compliance with the proposed bill could reach \$9.2 billion per year by the early 1990's.

ICI Makes Grant To Composites Lab

ICI Americas, Inc. granted \$1 million to the University of Delaware's center for composite materials for the construction of a 35,000 square-foot composites manufacturing science laboratory at the Newark, Del., campus.

The laboratory will draw together 150 people, including 74 graduate students and 23 faculty members from the chemical, civil, electrical and mechanical engineering departments, ceramics and materials science in a multi-disciplinary program to develop advances in composite materials and related sciences.

Primary effort at the laboratory will focus on finding solutions to problems encountered in composite materials production and processing, involving mechanics and design science, materials design and durability and computation software.

In announcing the grant, Harry Corless, chairman of ICI Americas, said, "The University of Delaware's Center for Composite Materials, founded in 1974, is widely regarded as being the leading center for composite research in the United States."

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PERFUMES & FLAVORINGS

**Dillweed Oil Market Tightens
As Domestic, Imports Clash**

West Coast dillweed oil prices have climbed from \$6.80 per pound to \$7.25 in \$7.75 per pound in the last two weeks. Eastern European dillweed oil prices have held steady at \$6.50 to \$6.80 per pound f.o.b. New York. The lower prices of imported dillweed oil have stabilized spot prices at \$7.00 per pound.

Hongkong and Bulgaria dillweed oil, produced almost exclusively for export to the U.S., is underselling the US material because the Europeans are releasing the last of their carryover.

"The Eastern Europeans haven't sold all of last year's yield and are keeping the prices down," says an essential oils importer. The European dillweed oil is offered in the U.S. because "pickles using the dillweed oil are mostly an American dietary component. Europeans don't generally eat them."

An oils broker stresses seasonal timing as being behind the European pricing: "Importers are getting rid of the old crop dillweed oil while the West Coast material is still higher, and before the new crop comes in."

The strategy seems to be working in that there are already reports of limited availability of the European dillweed oil. "Very little old crop European can be purchased right now," says another broker, "and though quantitative estimates are not available, the new crop production is underway."

US PRODUCTION OUTLOOK

The US production situation points to an overall tighter market. A major dillweed oil supplier relates a substantially lower production outlook:

"This year's US dillweed production will be 25 percent less than last year's, down from 2,270 acres harvested to 1,620 acres harvested." The carryover from last year, he says, was down sharply, from 20,000 pounds the year before to 3,600 pounds.

According to a domestic dillweed grower, the European and American products are qualitatively different. "Organoleptically, the two products are not the same. The flavor imparted by the European material is closer to dillseed oil than dillweed oil. But this may not matter to a pickle packer in the long run."

"Relative carvone levels are also an issue. One trade source stresses the West Coast prices include a guarantee of minimum 37 percent carvone, although natural oil, while some incidence of cut dill has occurred in the street." He also notes that "the European dillweed oil runs generally higher in carvone levels than the US oil."

The urgency with which the imported dillweed oil has been offered to US buyers has led to speculation on the upcoming European crop. Late price quotes on remaining 1985 Hungarian oil have been as high as \$17 per kilo, says one buyer.

"It's difficult to tell if they're short or if they're trying to raise the price for future purchases," he says. Another trade source con-

tends that the 1986 crop may be spotty. The Chernobyl accident, but this is completely unsubstantiated.

Regardless of the state of the foreign dillweed oil crop, says a domestic producer, "in

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CHANGES/UP

Anetho Seed, Dominican, 4c per lb.
Bergamot Oil, Italian, \$2.75 per kilo
Cassis, Korinji, 1.54-1.6c per lb.
Clove Leaf Oil, Indonesian, 30c per lb.
Cumin Seed, Indian/Italian, 24c per lb.
Cumin Seed, Chinese, 37c per lb.
Cumin Seed, Turkish, 34c per lb.
Eucalyptus Oil, Chinese/Canadian, 35c per kilo
Ocotea Oil, Chilean, 60c per lb.
Orange Extract and Tangerine Oil, 1c per lb.
Peppermint Oil, Chinese, 10c per lb.
Rosemary, Spanish/Portuguese, 2c per lb.
Sage, Olmiston/Prime, 10c per lb.
Sage, Albanian, 15c per lb.
Sage, Turkish, 5c per lb.

CHANGES/DOWN

Caraway Seed, Dutch/Polish, 1c per lb.
Cardamom, Indian/Bogor, 26c per lb.
Cinnamon, Indian, 1-2c per lb.
Chillies, Pakistan/Indonesia, 2c per lb.
Ginger Oil, Chinese, 52c per kilo
Ginger Oil, Indian, 2c per kilo
Majoram, French, 2-5c per lb.
Peppermint Oil, Brazilian, 5c per kilo

PERFUMES INDEX

The Perfumes & Flavorings Index reflects the prices of 11 representative materials in this sector and the quantity of each supplied in 1985.

Sept. 18, 1986 71.00
Sept. 12, 1986 71.00
Aug. 22, 1986 71.00
Sept. 20, 1985 71.00

Chemical Prices Start on Page 52.

trend being established by both the domestic and imported markets is that of continuing tightness and firmer prices."

ESSENTIAL OILS

BERGAMOT OIL — Expressed bergamot oil continues firming at \$44 per kilo, cost and freight, New York, up from \$40.50 per kilo just week.

The oil is enjoying an upturn after a dip in the market of the past two years. "The price of the bergamot fruit has been very low," says an importer, "primarily because of the strong dollar and its effect on Italian production."

The dollar, at a peak against the lira in March 1985, made it difficult for Italian growers to secure a profit. According to an importer, "they received very low revenue for their investments." The producer then harvested less oil, losing interest to the point that

Continued on Page 49

PERFUME & FLAVOR IMPORTS: JULY

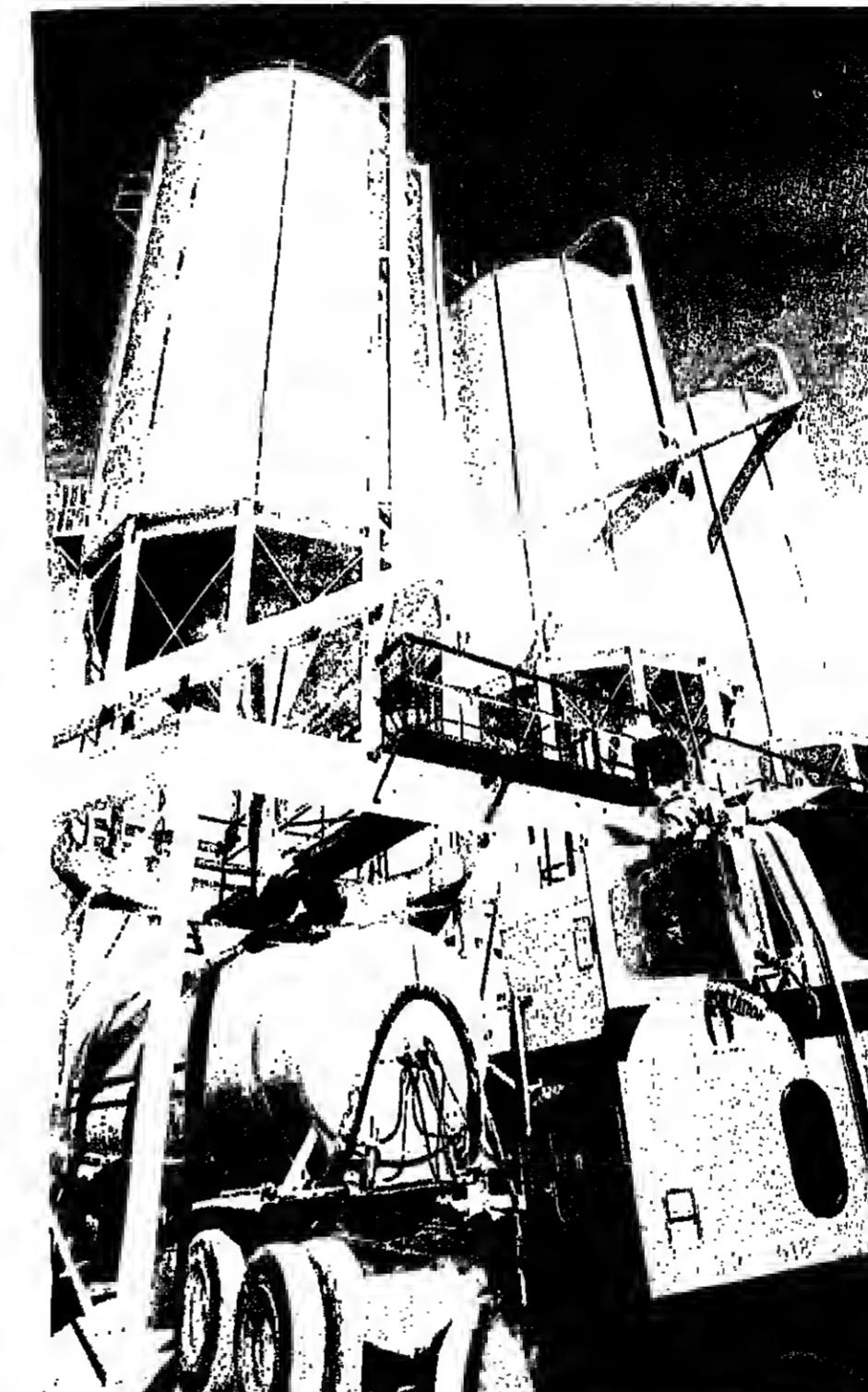
CENSUS BUREAU REPORTS ON THE KEY AROMA CHEMICALS

	JULY '86	JUNE '85	YR to Date '86	JULY '85
Senzyl Acetate	122,128	141,972	795,185	53,774
Castoreum	27,848	2,481	41,469	1,171
Citral	12	6,173	6,173	6,173
Chromone	33,258	19,821	125,113	385
Civet	2,379	887	21,882	1,000
Ethyl Vanillin	50,708	41,785	240,065	85,915
Eugenol/Isoeugenol	25,094	20,883	166,785	56,034
Geraniol	12	9,007	9,007	397
Hydroxycitronellal	38,658	15,862	250,417	37,847
Indole	2,200	2,304	15,226	1,171
Ionone	97,170	78,818	417,382	78,745
Linalyl Acetate	144,402	98,849	474,337	52,774
Menthol	219,962	422,906	1,589,735	47,816
Methyl Salicylate	132,983	94,075	565,951	49,000
Musk, artif.	145,892	192,285	846,324	114,765
Phenylethyl Alcohol	185,098	87,322	1,047,715	202,202
Ricinol.	12	374	374	202
Vanillin	364,169	385,980	2,083,859	202

Chemical Marketing Reporter



Shippers Are Seeking More Flexibility



Chemical Industry Shift to Specialties
Favors Trucks at Expense of Rails
As Distribution Becomes More Complex

By VINCENT O'SULLIVAN

As the chemical industry gradually shifts its portfolio toward specialty chemicals, trucks will gain a greater share of the industry's transportation needs at the expense of rails. While trucking is more expensive per freight mile than rail, shippers will look for the greater short-haul flexibility of trucks to accommodate the more complex distribution of higher valued chemical products.

In addition, chemical buyers, aiming to reduce their average stocks as they embrace "just in time" inventory methods, will request a growing number of trucked shipments. The return on the additional cost will be a reduction in inventories as less stock moves across the country in freight cars.

Overall, chemical shipments inland, the second largest freight volume after clay and cement, will grow by an estimated 4.5 percent per year through 1990. Reebel Associates of Greenwich, Conn., says that total domestic shipments in 1985 were 304.3 million tons. Of that, 28 percent, or 102 million tons, moved by rail, while 60 percent, or 184 million tons, went on board trucks. The remaining traffic, 45 million tons, or 12 percent, went by barge. Analysts forecast that truck shipments by volume will grow fastest.

SHIFT TOWARDS TRUCKS

Reebel sees truck growth at 4.4 percent annually by volume, rail at 4.2 percent and barge at 3.7 percent volume growth per year. "Chemical companies who own (rail) tank cars see a shift towards trucks but the change is slow in coming," says Peter Stone of Reebel.

Agricultural chemicals are the single largest component of chemical shipments in the U.S. They also depend largely on rail. Due to a slow reduction in the US share of world fertilizer markets and a flagging US farm economy, they will have the largest impact on slower growth in chemical rail loadings. "Production of agricultural chemicals is down and this drags rail (shipments) down," observes Bernard Campbell of Data Resources Inc.

Dow Chemical Company says its current inland shipping needs are evenly divided between rail, truck and barge. But the company is on a "long term program to shift to higher valued downstream products," according to Paul F. O'reilly, Dow's president and CEO.

Dow's manager of transportation, government and public affairs, Keith Bunting, comments, "With the changes our company is going through we may become more trucking oriented."

Trucks are more adaptable to a specialty business, says Mr. Bunting, since they can accommodate smaller volumes, lighter loads and most importantly, a larger number of distribution points. Taking a long term view, Mr. Bunting

The chemical industry's shift toward specialty products, combined with the emergence of "just in time" inventory methods, favors increased reliance on trucks, rather than rail, as a shipping method. Also, hurtling rail is the downturn in agricultural chemicals, which are largely transported by rail. On the whole, inland chemical shipments are expected to grow 4.6 percent a year through 1990.

Chemicals Shipping '86: Trucking Set for Gain

RAIL AND TRUCK: Trucking is expected to gain at the expense of rails Page 29

WASHINGTON: Lawmakers are seeking tougher truck safety laws Page 32

INTERNATIONAL: Implementation of anti-pollution regulations angers shippers Page 34

CHEMICAL STORAGE: Overcapacity in chemical storage industry appears to be easing Page 41

COMPANY FLEETS: Price war among commercial carriers is expected to cease Page 36

SMALL LOTS: Less-than-truckload shipments serve an important function Page 38

US WATERBORNE: Chemical barge business shows signs of a recovery Page 40

Page 41

CHEMICALS SHIPPING '86 RAIL AND TRUCK



expects Dow's use of trucking to expand to between 40 and 45 percent of its total inland volume.

E.I. du Pont de Nemours & Co., a company that is expanding its specialty business but maintaining a large stake in commodity materials, says its trucking volume is up by a total of 10 percent in the last five years, while its rail volume is down by about 7 percent. Also as a result of deregulation and better trucking rates and services, the company has largely spun off its in-house trucking fleet since 1981.

This company feels, however, that there

are areas where rail could see strong growth. "Intermodal methods," says Clifford Sayre, director of logistics for Du Pont, "have not realized their full potential." Speaking specifically about inland shipment, Mr. Sayre points out that cooperation between rail and truck could be better.

"Since the late '70's, rail didn't want to give anything away to trucking and vice-versa," he explains. While ocean-going shipments have gone around the problem with through bills of lading and ocean-going containers, domestic traffic is lagging. "Intermodalism is starting to realize its potential in the inter-

national market place," explains Mr. Sayre, "but it has come up short on the inland routes."

Mr. Sayre also sees greater use of backhaul routes as a possible money saver for railroads and a step towards lower overall shipping costs.

For instance, his company's acetonitrile unit in Memphis exports products to the far East, while a Nissan plant closer to imports material from Japan. He sees this as a great opportunity to backhaul his material to the Pacific.

However, Mr. Sayre laments that antitrust laws don't allow Du Pont to talk to Nissos on a move that might lower their shipping costs. "It's up to the transportation company to fill their backhaul routes," he concludes.

FMC, another company with diversity in specialty and commodity chemicals, is bucking the trend away from rail with expansion of its piggyback fleet. In total, the company ships 80 to 85 percent of its tonnage by rail. FMC is expanding its piggyback container fleet from a current fleet of 600 to an estimated 2,500 to 3,000 in the next two years.

BOXCARS BECOMING EXTINCT

John Noll, FMC's traffic manager for the industrial chemicals group, says that "boxcars are becoming extinct." Piggyback containers and increased utilization of intermodalism has been given a shot in the arm by deregulation, which he says "has forced both trucking companies and rail lines to look for innovative ways to compete in the marketplace."

American Hoechst also reports strong interest in intermodal and has recently started moving its material it imports from Europe to Atlantic ports on double stack cars. Ten percent of the company's sales, according to Michael Piron, vice-president of corporate chemical transportation, are imports. He estimates that since starting double stack shipments six months ago, about 5 percent of its imported material is moving through double stack.

Other companies say that double stack shipments have not been a real option for them. The method is most appropriate for lighter, dry materials, rather than liquids, more dense compounds that would pose weight problems in a two-tiered attack.

As innovations emerge in rail and truck, insurance questions arise on handling becomes more complex and dangerous. Ideas such as rail truck transfer where material is pumped directly out of lung haul tank cars into short haul trucks to support a hub and spoke distribution system has been largely ignored by chemical companies. Shippers



HOPPER CAR: Rail transportation of agricultural products is following the downturn in the US farm economy.

are looking to reduce their liability and have been slow to accept this method.

Hoechst has, however, adopted rail truck transfer to move granular polyethylene from Texas to Indiana. The material starts out in 190,000-pound capacity rail cars and is broken out in truckload quantities by agents in the Midwest.

While rising insurance rates have been a broad based industry problem, chemical shippers have seen minimal impact so far. Transport companies, particularly truckers, however, have had to bear a large burden of higher rates, according to Mr. Campbell of Data Resources. "Truckers have been battered by the insurance problem."

However, he notes that "railroad performance in accidents, loss and damage has been exceptional." If it were not for this, railroads would have seen much higher insurance rates and be pushed for an even greater loss of market share than is already predicted.

What has been most difficult for truckers is their inability to pass increased costs along to customers. "To some extent they (truckers) pass higher cost along but in most cases they eat them," according to Mr. Campbell. Extreme competition and overcapacity among truckers has made price increases very difficult.

Truckers have made some gains in cost improvements this year, however, as diesel fuel prices have fallen considerably.

It railroads, carrying about half the percentage of fuel cost of truckers, have not benefited as strongly from lower diesel prices.

INTERMODALISM: One company's transportation expert says intermodal methods of transport have not realized their full potential.

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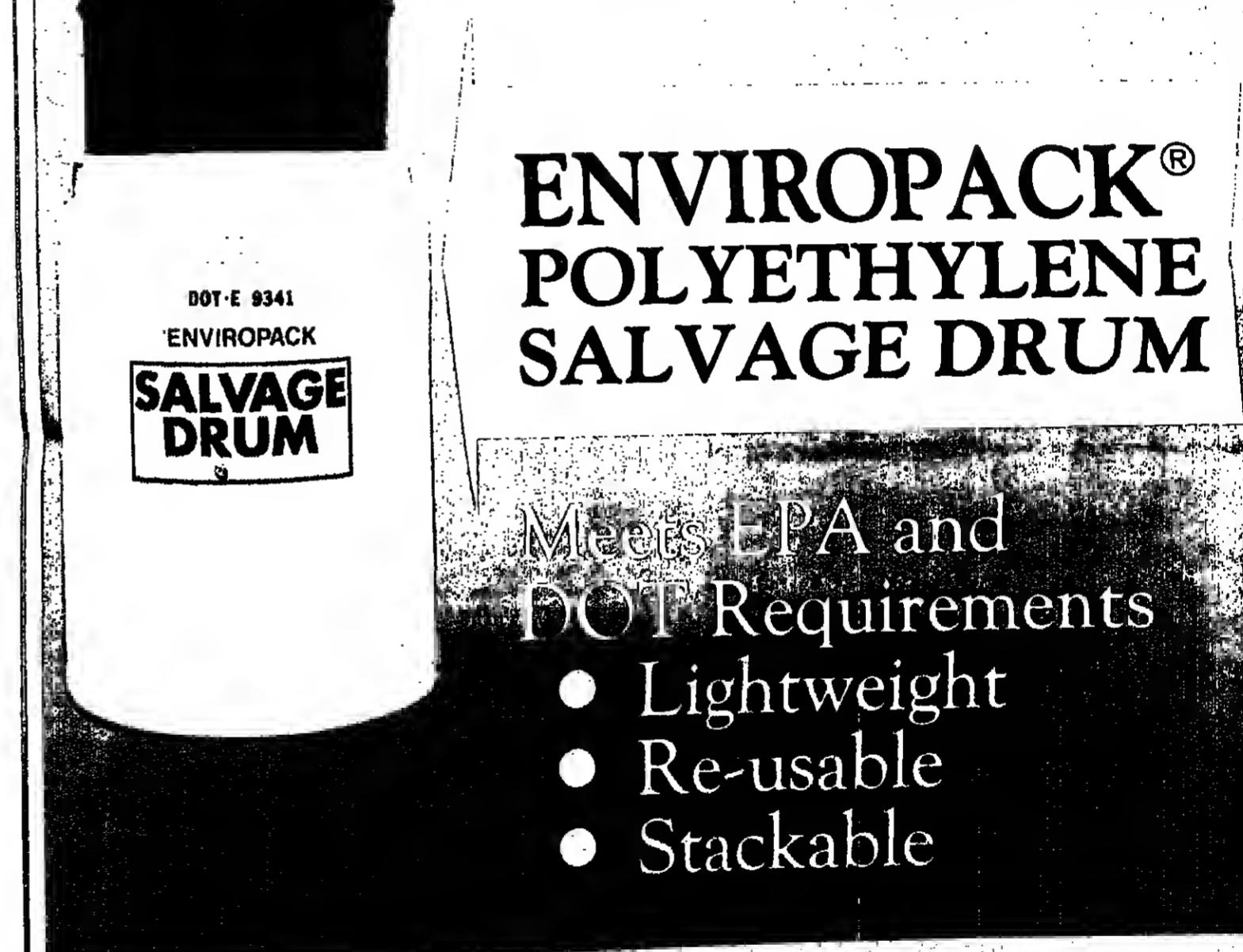
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DOW Chemical Company expects the use of trucking to expand, but not to the expense of railroads and ocean vessels. Trucks are more susceptible to highway bottlenecks; the company expects

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CHEMICALS SHIPPING '86

WASHINGTON

Truck Safety Laws Draw Fire on the Hill

By GLENN HESS

While the number of train accidents involving hazardous chemicals has declined sharply since safety features were added to tank cars in the late 1970's, some members of Congress say they are concerned that similar progress is not being made on the nation's highways.

"Truck safety laws in this country are a sham," declares Rep. Timothy E. Wirth (D-Colo.), chairman of a House subcommittee on telecommunications, consumer protection and finance.

"Lives are being threatened by weak, confusing laws which are supposed to be governing the shipment of hazardous cargo," he says. "We need stronger, more effective legislation to guard against senseless preventable accidents."

Rep. Wirth has introduced sweeping legislation to overhaul the Hazardous Materials Transportation Act, which expires on September 30. But with time running out in the current legislative session, Congress is expected to reauthorize the existing statute for another year and then consider substantive changes in 1987.

Rep. Wirth, along with Reps. Cardiss Collins (D-Ill.) and James J. Florio (D-N.J.), released a study earlier this year which blamed human error for about two-thirds of transportation accidents involving haz-

ardous substances, such as toxic chemicals and radioactive materials.

Some of the more frequent errors involved loose fittings and valves, improper loading of trucks, and placing heavy freight on top of lighter materials — all of which could be avoided by proper worker training.

A study by the Congressional Research Service of the Library of Congress says Department of Transportation's general training regulations for transportation workers handling hazardous cargoes "can, at best, be considered to be vague."

"They do not specify the nature, content, objectives or length of required instruction, its desired frequency or when new employees should be trained," the study says.

"DOT's regulations do not require a certification or a testing program designed to ensure that these workers have a basic understanding of, and sensitivity toward, the hazardous properties of and risks associated with the chemicals with which they are dealing," according to the study.

Most drivers transporting hazardous cargo have to take, but not necessarily pass, a 66-question open-book examination.

"DOT's examination does not test whether someone is trained in, or has a basic understanding of, emergency response procedures appropriate to the job and responsibilities of being a driver of a truck transporting hazardous materials," the study says.

It cites a request by Clifford Harvison, president of the National Tank Truck Carr-

ers Inc., to require newly hired hazardous transportation workers to achieve a passing grade on a written exam.

A subsequent study by the Office of Technology Assessment found that many incidents involving hazardous substances are not reported to Federal accident and spill record-keeping systems, and that damages average more than \$160 million per year, at least ten times higher than the annual amount reported to Congress by DOT.

The report cites inconsistencies in state and local regulations, which often are confusing and burdensome for industry and enforcement officials.

"Data and information about shipments are so poor and difficult to acquire that state and local regulations are often developed with little or no understanding of the magnitude or nature of the problems to be controlled," the report observes.

The study also notes that despite the widespread risk of accidents involving hazardous materials, up to three-quarters of the nation's 1.5 million firefighters, police and emergency medical personnel lack proper response training.

The Wirth bill, which is opposed by the Reagan Administration, would centralize administration of several Federal laws relevant to hazardous materials transportation that are currently carried out by several agencies within DOT.

The legislation would authorize increased funding for Federal and state safety inspections and audits, and require drivers hauling hazardous cargoes to have proper training and to maintain a safe driving record.

EMERGENCY RESPONSE

Grants would be authorized for emergency response training for firefighters and local police, who often arrive first at the scene of an accident. The bill would also authorize grants to states and localities for designating routes for safe transport of hazardous materials, and require DOT to issue guidance.

Philip W. Haseltine, deputy assistant secretary of DOT, says the Reagan Administration agrees with the underlying objectives of the Wirth bill, but maintains it is unnecessary because the department is moving to correct the problems the legislation addresses.

Mr. Haseltine acknowledges there are "serious weaknesses" in driver training programs but says they will be corrected by proposed regulations that would require states to follow minimum Federal standards for trucking licensees.

The proposed regulations would prohibit tank-truck drivers from holding multiple licenses and require them to pass road tests in the type of vehicle they operate for a company.

"With a host of legislative, regulatory and policy initiatives either underway or being planned for deployment in the near future, the department asks for forbearance on legislation until we have our program in place and functioning," Mr. Haseltine told a July hearing held by three House subcommittees with jurisdiction over highway safety.

Without improved training for those who transport the materials, he adds, "We are simply waiting for disastrous accidents to occur."



Rep. Timothy Wirth

But Paul Rothberg, an author of the Congressional Research Service study, says the regulations proposed in May by DOT fall short of the requirements contained in the Wirth bill.

Mr. Rothberg says the department's proposals would not cover all drivers of hazardous loads or all workers handling the estimated 189 million shipments of hazardous materials in this country every year.

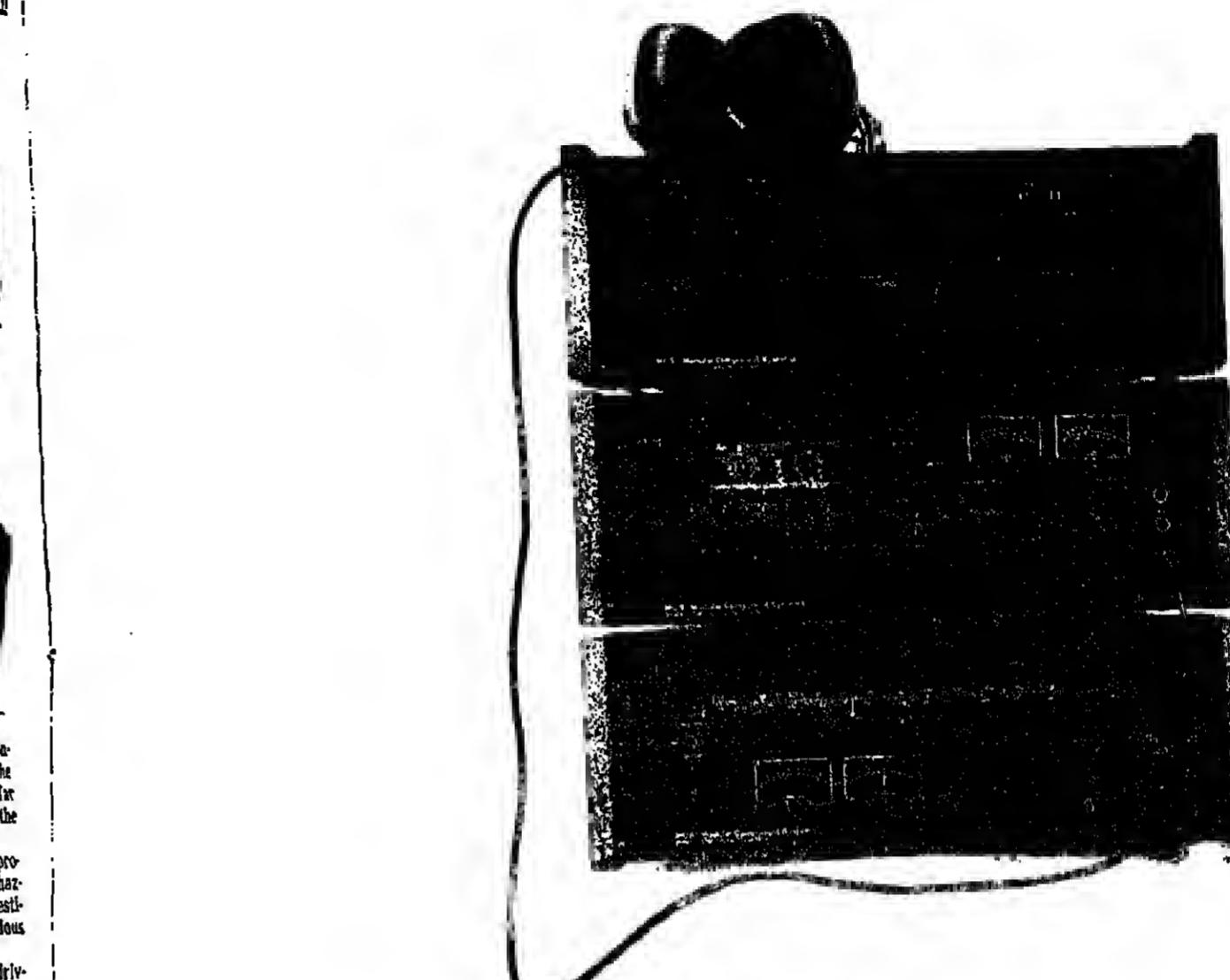
The proposals also would not require drivers to pass a written examination or revise the current DOT exam to ensure that drivers are tested on emergency procedures to be used following an accident, Mr. Rothberg says.

Rep. Wirth says he welcomes DOT's initiatives, but also expresses skepticism. "Fifteen years of rulemaking still has not yielded driver qualifications stringent enough to protect the public," he says. "Without legislation requiring increased qualifications, I fear that DOT's latest effort is but another episode of promises, promises."

Rep. Florio, chairman of a House subcommittee on transportation, also believes that legislation is necessary to help curb accidents and minimize damage.

"Despite the importance of training as a means of reducing the frequency of human error — and thereby dramatically reducing the number of accidents — DOT's regulations are vague, lack consistency and provide little direction to industry, the states or the localities," says the New Jersey Democrat.

Without improved training for those who transport the materials, he adds, "We are simply waiting for disastrous accidents to occur."



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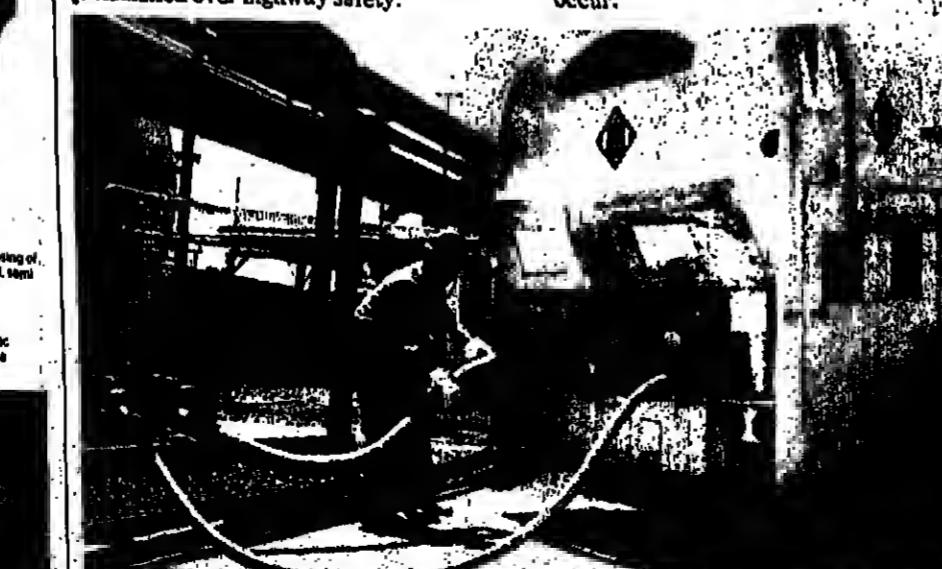
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TRUCK SAFETY: Lawmakers in Congress complain that not enough progress is being made to improve the safety of truck transport of hazardous chemicals. Current laws are not being enforced, say congressional critics.

CHEMICALS SHIPPING '86 INTERNATIONAL



Pollution Regulations Anger Shippers O'seas

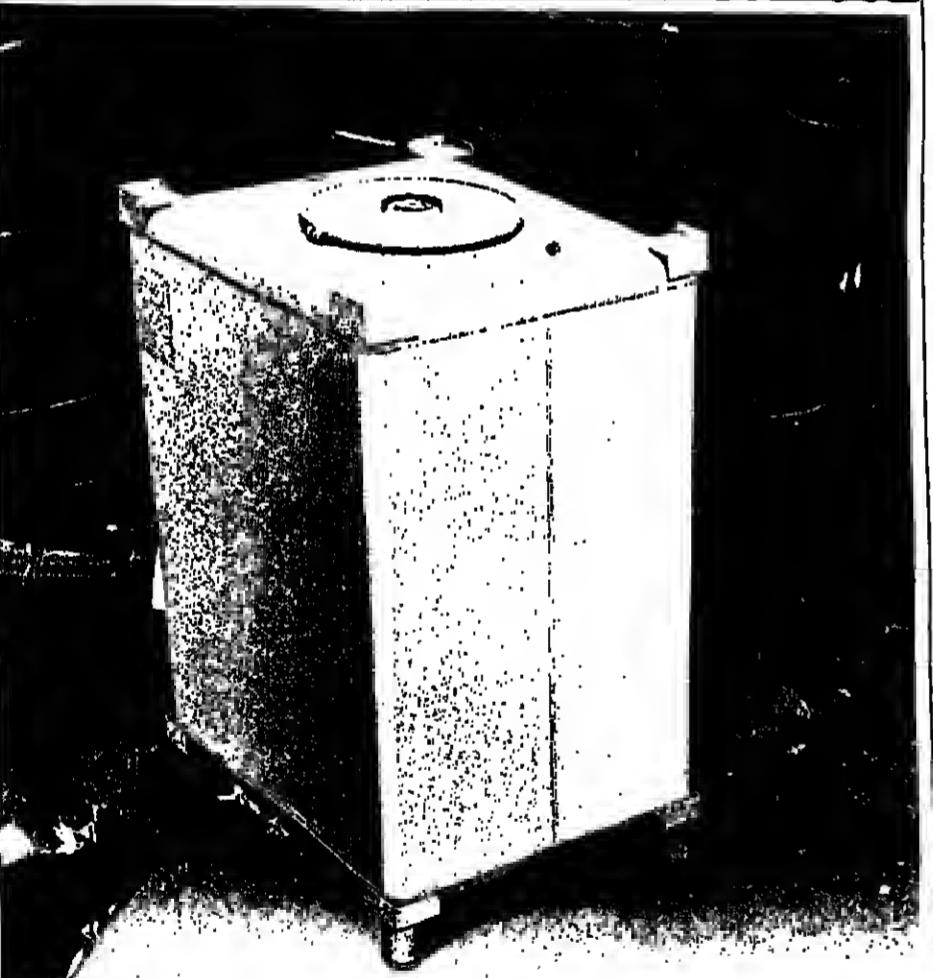
By SEAN MILMO

European chemical shipping companies, already deeply frustrated by several years of depressed cargo rates caused by overcapacity, are getting angry about the implementation of anti-pollution regulations due to come into force next April.

Ship owners have invested millions of dollars to ensure that their vessels comply with the new International Maritime Organization (IMO) rules, whose main objective is to reduce the disposal of toxic waste by ships at sea to a minimum.

But as the April 6 deadline — already put back once — draws near, the owners are finding that most governments and port authorities are doing little or nothing themselves to provide shore facilities for the reception and disposal of waste from ships.

"We are deeply unhappy — to say the least," says Trygve Meyer, an official at the Oslo-based International Association of Independent Tanker Owners (Intertanko). "Ships' masters will be under tremendous pressure. They risk losing their licenses if they do not comply with these regulations, yet no one seems to want to help them."



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Brian Rye, transportation officer at the European Chemical Industries Association (CIA). "Since the ship generates the slops it must be considered to own them."

The owners, on the other hand, think otherwise. "It is the cargo which is the danger and thus ultimately causes the waste," retorts Mr. Meyer. "So the onus should fall on the charterer."

The ship owners associations have drawn up a model contract for their members which puts legal and financial responsibility for the disposal of cargo residues on charterers.

The Bermudas-based Gotas-Larsen shipping company is already negotiating new contracts with its customers which take into account MARPOL Annex II. "If there are slops to be disposed of it is for the charterer to make the necessary arrangements," said Danny Sharp, chartering manager at the company's London headquarters.

The UK Government has confused the issue even further by introducing legislation requiring the terminal storage companies to receive the waste from the ships and then insisting that as "holders" of the residues, they are responsible for their disposal.

"That is tantamount to saying that a warehouseman owns what he is storing," says Harrison Call, executive secretary of the UK Independent Tank Storage Association.

GOVERNMENT RESPONSIBILITY

The IMO — a United Nations agency — has meanwhile put the responsibility firmly on the shoulders of governments.

"The convention makes it clear that governments are required to ensure that facilities are provided," says IMO's Information Officer, Roger Kohn, at its headquarters in London. "They cannot wash their hands of the whole thing."

The absence of agreement on the matter will probably mean that by next April only two ports in Europe — Rotterdam and Hamburg — will have waste disposal facilities available. Even then they will not be fully operative.

Rotterdam, Europe's biggest chemical port, which has been doing the most to get ready for the deadline, is at present only sure that it will be able to deal with three quarters of waste brought ashore.

But like Hamburg, it is fortunate to be assisted by a government subsidy towards the capital cost of setting up reception and treatment installations.

Many European governments are refusing to provide any financial help, pinning much of the burden on ports which are already hard pressed for cash.

The UK government, for example, is sticking resolutely to a "polluter pays" policy, effectively leaving the question of finance to be thrashed out by the ports, storage terminals, ship owners and chemical manufacturers.

"The chemical carriers have been lucky up till now to be able to clean their tanks for free — but at the expense of the environment," says an official at the UK government's Environment Department. "The cost of disposal

is now being passed on to the customer."

Continued on Page 43

"The slops are created by the ship," argues Eric Flotron, secretary of the European Chemical Coastal Tankers' Association (ECC), which also represents deep-sea operators, warned: "There will probably be chaos when the deadline comes."

The main problem is that governments, port authorities, ship owners, terminal storage companies and chemical manufacturers still cannot agree on who is responsible for the waste, and hence, for its disposal — even though the new rules have been known about since 1973 when the IMO convention was drawn up.

The regulations — called MARPOL Annex II — stipulate certain stripping requirements, depending on the toxicity of the product (categorized from A to D), and a mandatory prewash of cargo tanks for the most dangerous chemicals and those with high viscosity or solidifying substances.

Most of the prewash residues must be transferred ashore for disposal but MARPOL does not specify who should be responsible for this task.

The chemical manufacturers, supported by the storage companies, believe that it is up to the ship owners to ensure that arrangements are made for getting rid of the waste.

"The slops are created by the ship," argues

Brian Rye, transportation officer at the European Chemical Industries Association (CIA). "Since the ship generates the slops it must be considered to own them."

The ship owners are warning that the extra costs could be considerable if most ports are not properly prepared by next April.

"There could be a tremendous impact on costs if we have to keep slops on board until we reach a port able to receive waste," says Jan Houwers, managing director of Gebr. Bruere shipping company in the Netherlands. "Rates will be pushed up and up because there will be a diminishing amount of room on ships for cargo."

There is particular concern about ports in developing countries, most of which are unlikely to have reception facilities for waste, let alone the means for disposing of it.

Annex I of MARPOL, which contains IMO's anti-pollution rules on oil waste from tankers and which came into effect three years ago, has caused few problems because the oil has been easily recycled. Oil and waste

"is tantamount to saying that a warehouseman owns what he is storing," says Harrison Call, executive secretary of the UK Independent Tank Storage Association.

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Most of the prewash residues must be transferred ashore for disposal but MARPOL does not specify who should be responsible for this task.

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CHEMICALS SHIPPING '86 COMPANY FLEETS

Common Carrier Rates Heading for Upturn?

By AGNES SHANLEY

Chemical companies have been reaping the benefits of a price war among commercial carriers in the competitively-charged atmosphere that has prevailed since deregulation of the shipping industry.

Chemical transportation managers and shippers mostly agree, however, that the current situation is not sustainable, and that commercial truck rates are bound to rise.

"Commercial carriers cannot continue to offer services at below-cost prices," says Robert Henderson, executive vice-president of the Private Truck Council.

Jan Hansen, general traffic manager of W.R. Grace & Co.'s Construction Products Division, who sees a shakeout coming in the commercial shipping industry, expects the commercial carriers to stop "their bidding war."

Commercial carriers have been passing on token rate increases, largely swallowing huge increases in insurance premiums. Their customers report that rates have gone up only 2 to 4 percent in the past year.

Insurance costs for commercial truckers, meanwhile, are running 300 percent above 1984 levels and currently amount to an estimated 8 percent of shippers' revenue, compared to 3 percent of revenue in 1984, according to Clifford Rarivison, president of National Tank Truck Carriers Inc. Pre-tax profits last year fell to just 0.9 percent of revenue, compared to 4.5 percent in 1978, a good year for the commercial shipping industry.

By contrast, the cost of operating private truck fleets has remained relatively constant, according to A.T. Kearney Inc., a management consulting firm based in New York.

According to Kearney, average private fleet costs grew just 3 percent over the past four years, to \$1.35 per mile in 1985 from \$1.25 per mile in 1981. During the same period, inflation (as measured by the GNP price deflator) increased 18.8 percent.

Kearney points out that private fleet insurance is usually covered by a blanket insurance policy for the overall corporation. Many large companies, moreover, are self-insured and have seen only modest increases in insurance costs, compared to the commercial fleets.

"All of these trends seem to indicate a healthy and stable role for the private fleet in the total transportation system of the US," Kearney says.

Since deregulation, only 13 of 80 chemical

"half the story," observes Karen Arsenault, a Kearney associate in Chicago. What the survey doesn't reveal, she notes, is the number of private fleets that no longer exist. Moreover, many companies did not respond to the survey.

Large chemical producers contacted by this newspaper mostly reported that, since deregulation, their private truck fleets have evolved into a valuable, but secondary, transportation mode, typically handling less than 5 percent of their total trucking needs.

Most distribution managers cite an increased move to contract-basis, using split carriers as "fillers." While currently, most chemical firms report that 50 to 60 percent of

the trucking services provided by truck carriers is handled on a contract basis, they plan to increase that figure to over 80 percent in the next few years, while others already have.

As one trucker explains, "contract benefits the carrier by offering the guarantee of a more lasting relationship with the manufacturer and a more predictable business environment for investment and equipment and terminal facilities."

Transportation managers also point to the benefits of the contract basis, including the negotiating leverage it provides. As one explains, "with contracting, one can make arrangements. It's like the difference

between buying a car directly from the showroom floor and ordering one specially made with custom-designed features." This ability to control the shipping relationship has made contracting common-carrier services even more attractive than leasing, some say.

Company fleets, on the other hand, are typically used to move hazardous or reactive materials, to link centralized rail or truck routes to out-of-the-way spots, or to handle Inintercorporate hauling for PPG's glass and coatings and resins divisions.

Chemical manufacturers, however, prefer to see capital and manpower expended in product development and production. George Koslow, transportation director for PPG Chemicals, summarizes their philosophy: "A private fleet has to be a profit contributor in and of itself. If services can be purchased cheaply, what advantage can a private fleet offer?" He reports that his firm turns to common carriers (mostly on a contract basis) for most of its trucking needs. PPG's fairly large truck fleet (180 tractors and 350 van-type trailers) is used only in certain bulk transportation operations, and routes to out-of-the-way spots, or to handle Inintercorporate hauling for PPG's glass and coatings and resins divisions.

John Noli, manager of transportation operations for the industrial chemicals group of FMC Corporation, says his division currently has 15 to 20 trailers dedicated to transport of hydrogen peroxide and other reactive com-

modities. Virtually all of the total annual tonnage handled by truck is moved by common carrier, he says, most of it on a contract basis.

E.I. du Pont de Nemours & Co., fairly representative of many large chemical manufacturers today, had a large private truck fleet, but with the onset of deregulation, downsized it, later consolidating it with its Conoco subsidiary's fleet.

Today, the combined fleet is operated by Conoco, which DuPont treats like an outside carrier. Trucking, which comprises roughly half of the company's annual transportation costs, is handled by Conoco and common carriers, mostly on contract basis.

Clifford M. Sayre, director of logistics for DuPont's chemicals operations, says private fleets are "too expensive," adding, "chemical companies prefer to concentrate investments on their own operating facilities."

GREATER FLEXIBILITY

Frank Holzapfel, manager of truck transport for the chemical distribution department of Exxon Chemicals America, says outside shippers afford greater flexibility. "We find that we are better off investing money and management in chemical manufacturing."

Olin Chemical Company has a distribution strategy typical of many chemical producing firms. Roughly 65 percent of its tonnage is handled by rail, 5 percent by barge, and the remainder by truck. Of this total truck volume, most is handled by common carrier, half on a contract basis. The company has a substantial rail fleet, and will own and operate 3,800 railcars by the end of the year, in addition to 21 barges. Olin has few privately-owned trucks, and uses these only for special purposes — typically, for rush orders of hydrazine rocket fuel, or for supplemental bulk shipments of urethane system components.

MANPOWER SAVINGS

As John Badger, manager of distribution for the company, describes its setup, "using outside shipping companies represents a significant manpower savings, in addition to eliminating empty mileage problems." He sees a definite trend away from private fleets in the chemical industry, reporting that many competitors "are analyzing the prospect of selling their fleets and leasing them back, or going common carrier."

Keith Bunting, distribution manager at Dow Chemicals USA, estimates that his company's in-house fleet handles only 3 to 4 percent of its total trucking volume. "As long as we can find competitively-priced services," he explains, "we see no need to get further into the business."

Similarly, William Fries, transportation procurement director for the Chemicals Division of Montanol Company, reports that his firm currently owns and operates a fleet of 28 tractors and 80 trailers which together handle less than 5 percent of the company's annual trucking needs.

Some chemical distribution managers, however, are quick to point out the benefits of private truck fleets, particularly within a highly diversified corporate structure.

W.R. Grace & Co. currently has two private truck fleets, one for its Construction Products Division, and the other for its Distribution Traffic Services Division, Mt.

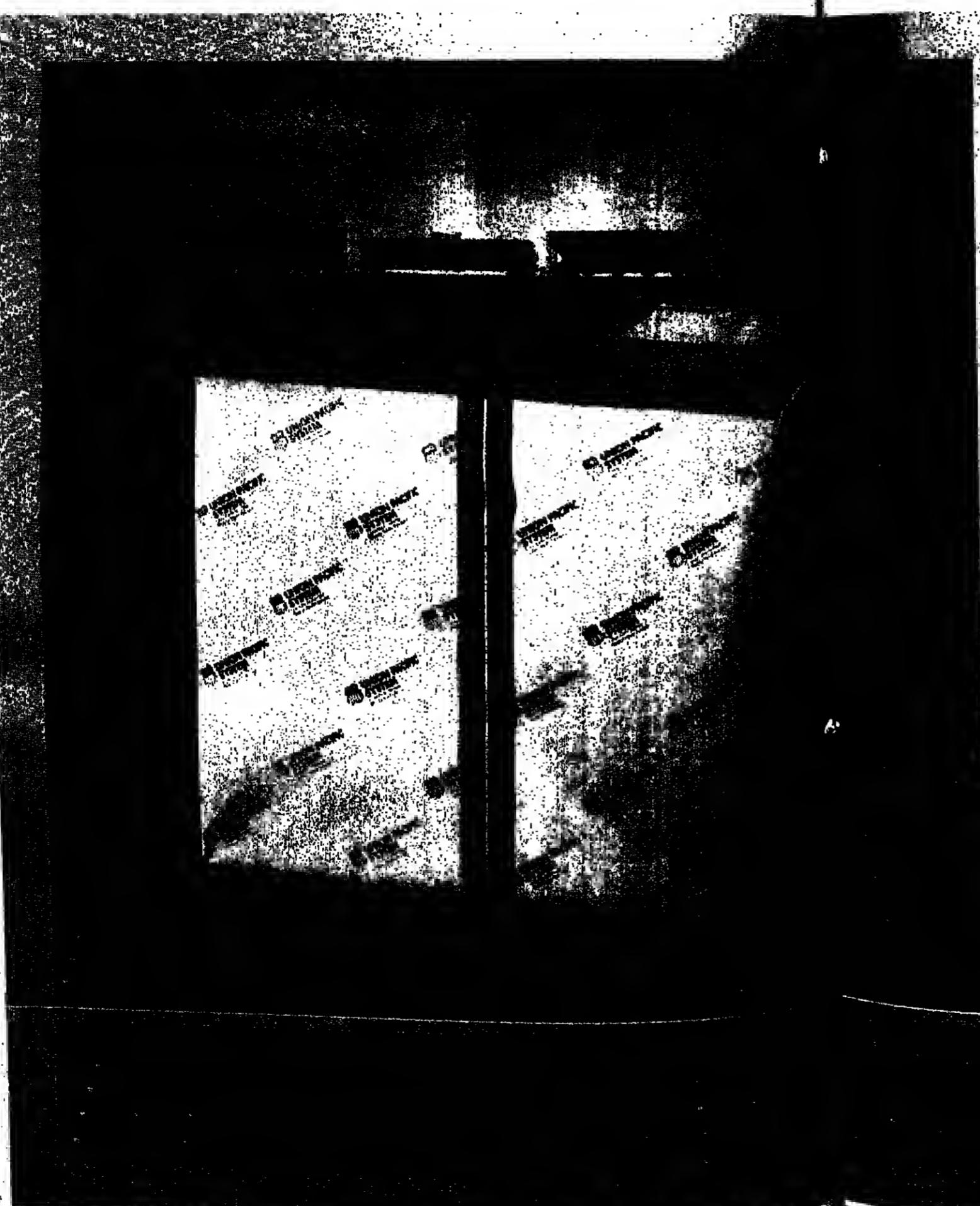
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CHEMICALS SHIPPING '86 COMPANY FLEETS



GRACE FLEET: W.R. Grace & Co. maintains a large private truck fleet. Its two trucking divisions handle high-volume transport of construction materials and ores, as well as volatile chemicals.

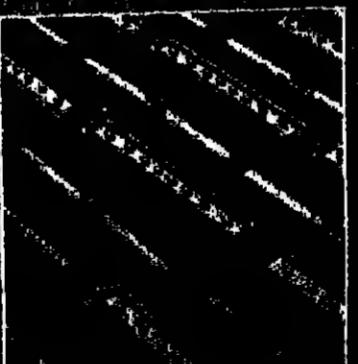
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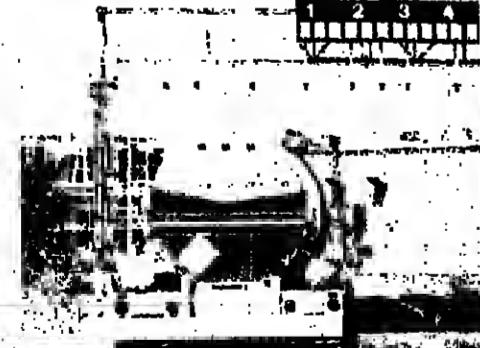
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COMMON CARRIER: Dow Chemical Company relies on common carriers to satisfy most of its trucking needs. Above, a tank truck prepares to leave the company's Joliet, Ill., facility.

CHEMICALS SHIPPING '86

SMALL LOTS

Small-Lot Shipments: Safety Comes First

By STEPHEN KEARNEY

Since many chemical buyers have needs that do not require full truckload shipments, suppliers frequently turn to less-than-truckload shipment (LTL) services offered by common carriers.

When selecting a carrier, a Moby Chem-

ical Corporation spokesman comments, "the first criterion is safety, the second is service, and the third is cost." Reichhold Chemicals, Inc. says that it is important to regularly monitor the performance of carriers in order to ensure that reliable service is maintained.

Common carriers are frequently relied upon for the hauling of LTL's. In analyzing the merits of a carrier for LTL delivery,

considerations involve whether the carrier has sufficient insurance coverage and an acceptable loss to damage ratio.

With the emphasis on safety, shippers say that both they and their carriers are very familiar with guidelines established by Occupational Safety & Health Administration, Environmental Protection Agency and Chemical Transportation Emergency Center (Chemtree).

Department of Transportation mixing and loading rules need to be observed in order to ensure safe transportation of hazardous chemicals. This is seen as quite important in arrangements where LTL shipments are combined.

Shippers say they often aim to consolidate

their loadings by putting more than one LTL onto a truck in order to create a full truckload. Stevau Company says that it is possible to save up to 50 percent of the cost of shipping by consolidation.

Pooling arrangements, in which a central warehouse acts as a distribution center where LTL shipments may transfer from one truck to another are seen as useful in cases where expedited delivery is not essential. However, Muhay's distribution manager observes that pooling is less prevalent at the present time than it was during the energy crisis years.

Varying discounting levels are cited by producers for LTL shipments. One specialty chemical supplier says that a 20 percent discount rate is normal for good service, and that higher discount rates are offered, but "don't provide the service."

However, a flavor and aroma chemicals supplier says that a discount rate of 30 to 35 percent can be obtained "very commonly." A large resin-based chemicals producer comments that the discount level depends on how much leverage you can exert through frequency and quantity of business.

It is argued that deregulation of the trucking industry has created a more competitive environment that has resulted in more sizeable discounts and provided producers with an incentive to use the common carrier rather than in-house fleets for LTL deliveries.

While many agree with this, a distribution manager for Bio-Rad Laboratories says that "deregulation has had its pluses and also its disadvantages." Among the latter is the difficulty of some small carriers in staying in business. With price-cutting wars, he says, the end result could tend to be fewer companies and less competition.

Chemical suppliers say that the trucking industry has made progress in its ability to keep track of shipments. "The tracking system in the industry has been updated," says Chem-Fleur Inc.'s shipping manager, with the procedure involving the assignment of a computerized number to each LTL.

"If something is lost, that number is given to the trucking company, they create a claim number and find out whether the shipment was delivered and signed for," he says. A predesignated release value is used in determining compensation for lost amounts.

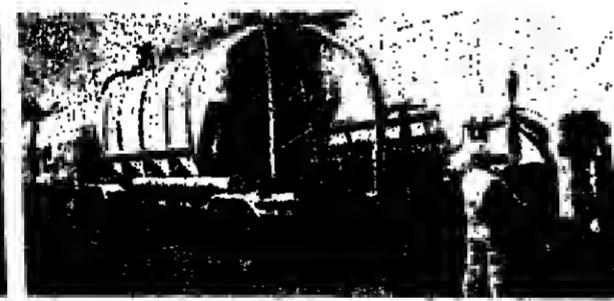
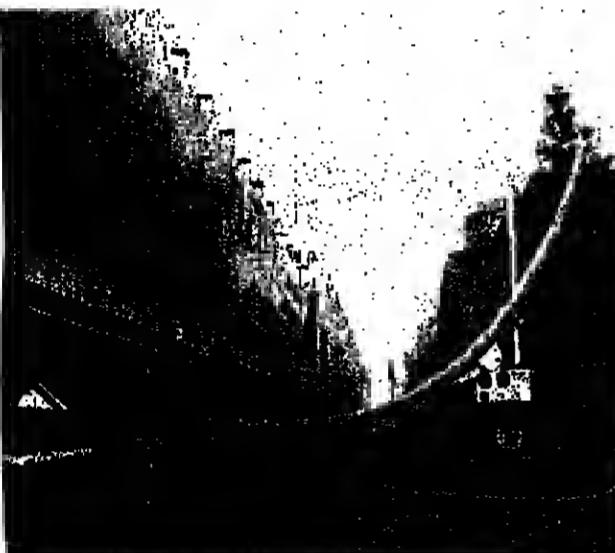
Reichhold says it operates "on the exception rule — if it isn't going to be there on time, we expect them to let us know."

According to Moby, modern technology has resulted in the use of electronic data interchange, whereby the chemical company's computer can communicate with the carrier's computer for tracing and expediting freight bills.

Producers observe that relationships with distributors are often advantageous for the handling of LTL shipments. Some companies focus on using distributors for LTL and handle larger orders themselves. A distributor "has his own brand of customer," who may be

Continued on Page 42

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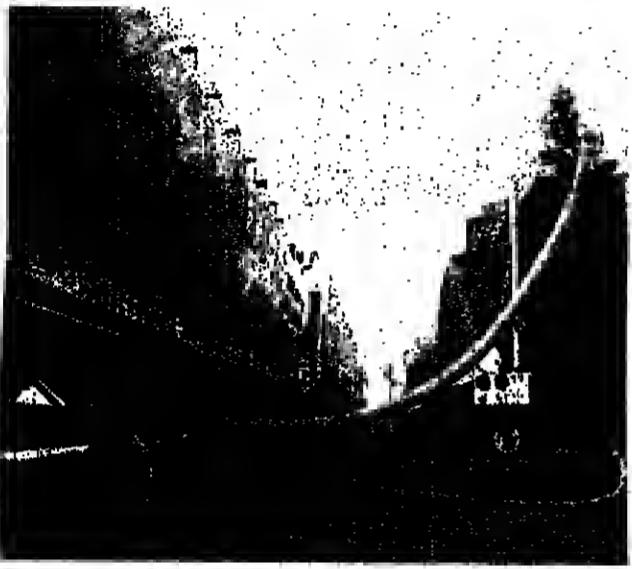
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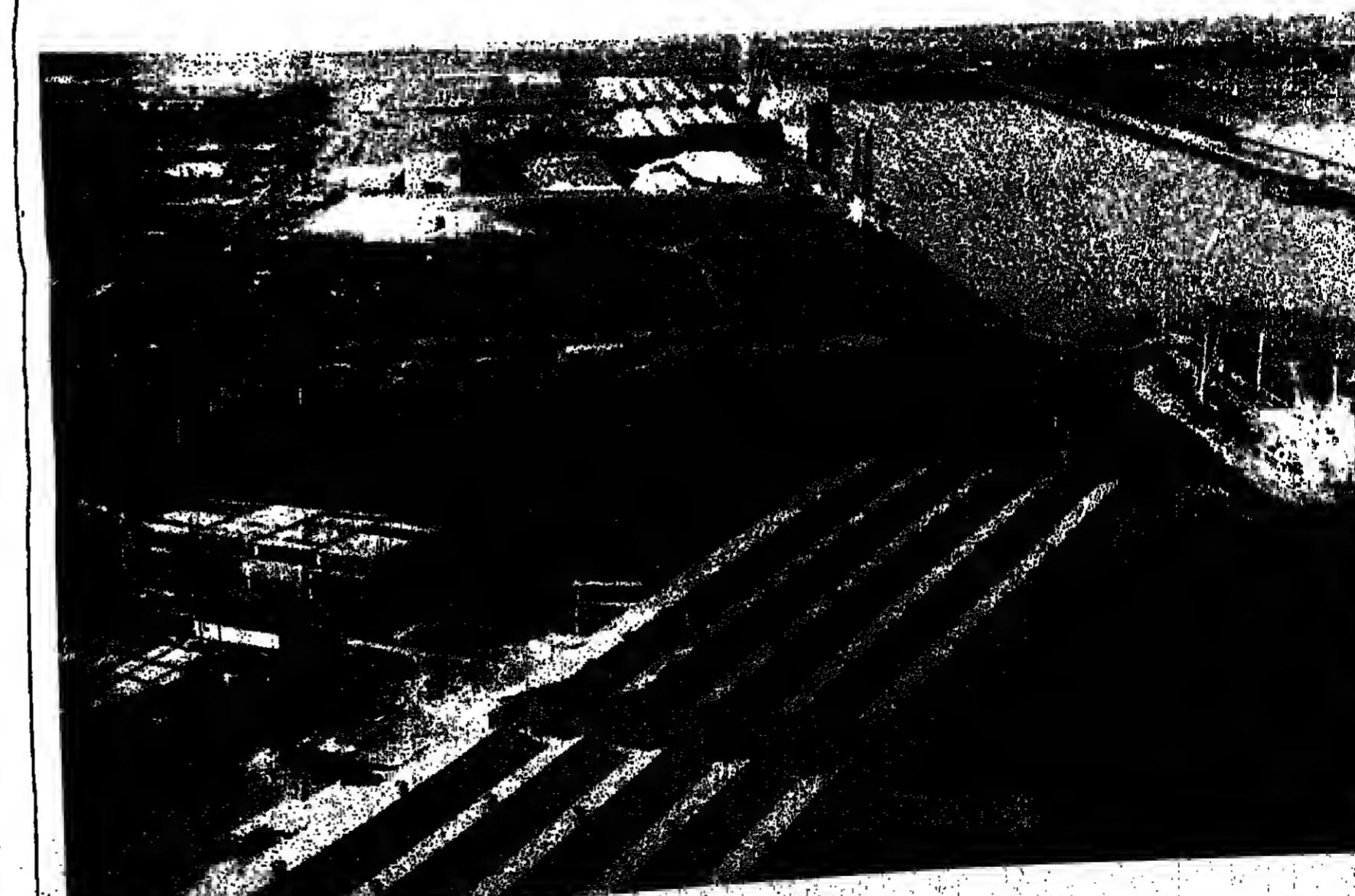


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CHEMICALS SHIPPING '86

US WATERBORNE

Chemical Barging On Way to Recovery

By MICHAEL MCCOY

The chemical barging business is beginning to show signs of recovery. Those involved say that barge operating rates have been rising slowly since 1982 to the point where many barge operators now consider themselves fully operational. Some bargers say they have experienced a particular demand surge over the last three to five months.

Barge price rates have been a lot slower to pick up, however, and most involved see the lack of profitability as the major sticking point in the business today.

"We were like many other barge lines through 1980 or 1981," says Ray Greenwell, director of liquid cargo sales at American Commercial Barge Lines (ACBL). "We were doing really well, and then the crunch came — 1982 was a very bad year."

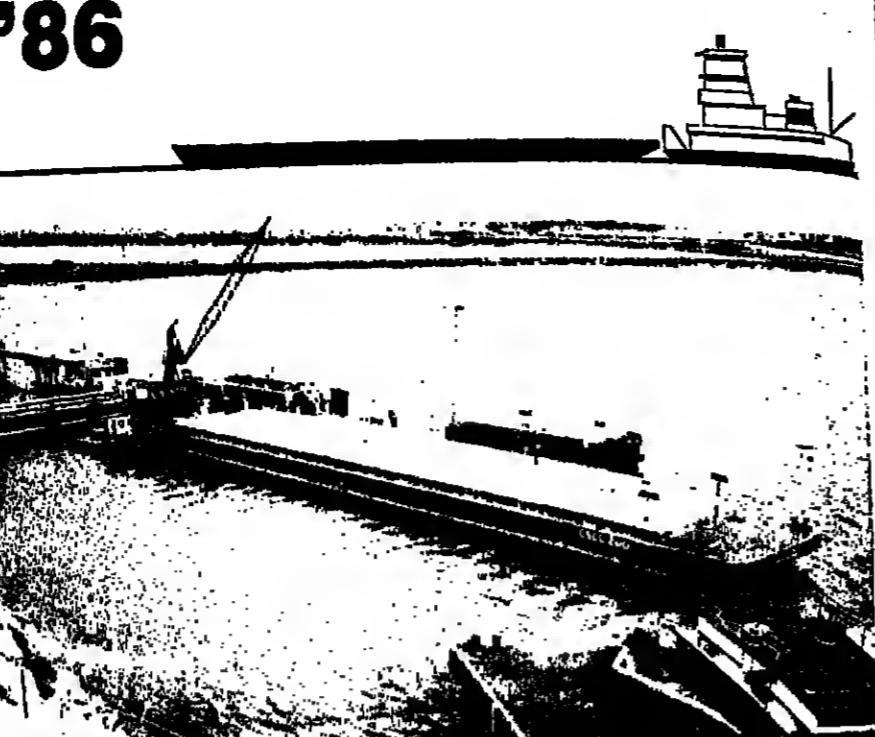
Mr. Greenwell feels that business picked

up again in 1983, then was flat in 1984. Since then, however, it has been a slow but steady rise. "Not back up to the late 1970's," he says, "but much better than four years ago."

Chuck Sweeney, director of liquid transport at Dravo-Mechling, says that over the past month or two there have been times when he actually lacked barges of certain types to send out. This is a far cry from the idle equipment levels of 30 percent experienced by the industry in 1982.

Bargers are not sure what to attribute the new business to, although low petrochemical prices and the change in exchange rates are often mentioned. Mr. Sweeney guesses that the anticipated jump in oil prices may at least for the present be prompting buyers to stockpile petrochemicals while the price is right.

The transportation manager for a large chemical company notes that the last two years saw a number of chemical plant closings in the Midwest and feels the closings



CHEMICAL BARGE: Loading facilities at PPG Industries' Laka Charias, La., chemicals complex are used to ship a variety of the plant's products.

have increased barge traffic on the inland waterways.

The closing of capacity by FMC at South Charleston, W. Va., Pennwalt in Wyandotte, Mich., Dow in Midland, Mich., and Monsanto at Saugat, Ill., are examples of the Midwest chemical decline.

This observer says that similar closings at his company have prompted an increase in in-house barge shipments upriver from facilities in the Gulf to Midwest distribution points, and reasons that other companies may be doing the same. He reports that his company's plant closing has resulted in less overall tonnage shipped, but more ton-miles logged.

Another barge manager agrees up to a point, but adds that while a Midwest plant closing will undoubtedly increase shipments of finished products upriver, the barging of raw materials into the Midwest will likely decrease.

Whatever the reasons for the increased utilization, bargers are not quite ready to celebrate an end to bad times. Barge price rates are following neither the slow recovery experienced since 1982 nor the quick pick-up of the last few months.

In fact, barge rates, says Mr. Greenwell of ACBL, have done almost nothing since the trough of 1982. He, for one, feels that psychology has much to do with the rate stagnation. "We went down so hard (in 1982) that people

now just don't have the confidence," he says. A move to increase rates requires a lot of cautious market testing, he says, and the stakes can be very high, since business is easily lost to competitors not willing to raise prices likewise.

Mr. Greenwell feels that before the chemical barging industry can begin to increase rates, the chemical industry, especially the commodity sector, must get fully back on its feet. "I'm glad the barges are busy," he says, "But rates will take a while." Most in the industry agree, and the feeling is that significant increases are one or two years away.

"WE NEED IT"

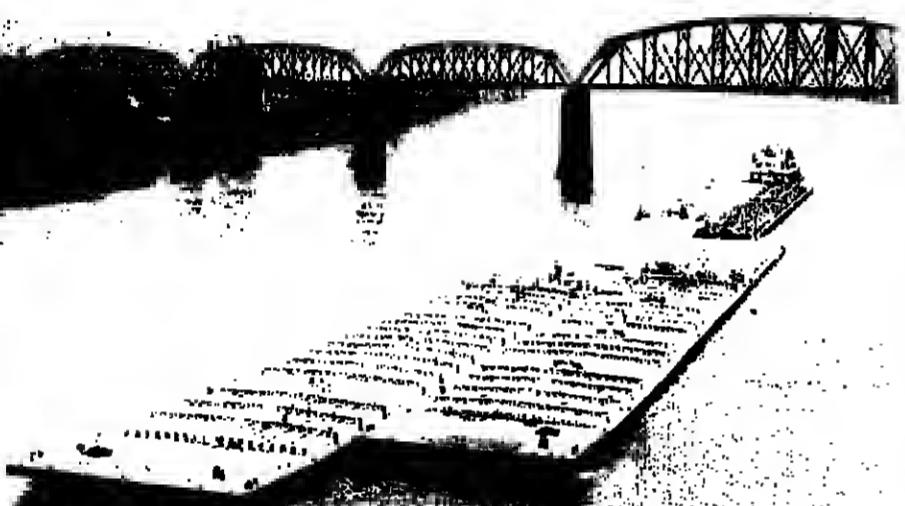
One barge manager points out that in the late 1970's, the business had many justifications for rate increases: strong chemical demand, rising fuel costs, soaring inflation and powerful labor unions. It was easier then, he says, to stick a reasonable profit on top of all that.

Now, however, fuel costs are constant or declining, inflation is low, chemical demand is only moderate and unions are not nearly as strong. At present, there is no justification for a hike except "we need it," he explains.

An operations manager adds that in this industry an equipment oversupply situation tends almost directly to barely marginal profits. When oversupply exists, he says, the barge industry tends to run at or very close to minimum costs, preferring to operate as much equipment as possible in order to spread out fixed expenses.

Given enough time, most feel rates will rise. A company leaving the business does little to change things, because another concern will always end up with the barges. Little by little, though, old barges will be taken out of service and with little investment being made in the industry, they won't be replaced. Eventually, observers feel, supply

Continued on Page 42.



HEADING TOWARDS RECOVERY: Barge operating rates have been rising slowly but steadily since 1982, to the point where operators are, for the most part, fully operational. Profitability, however, is taking longer to come around.

MAKING HISTORY

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CHEMICALS SHIPPING '86

CHEMICAL STORAGE

Chemical Storage Takes Turn for Better

By Ronald Begley

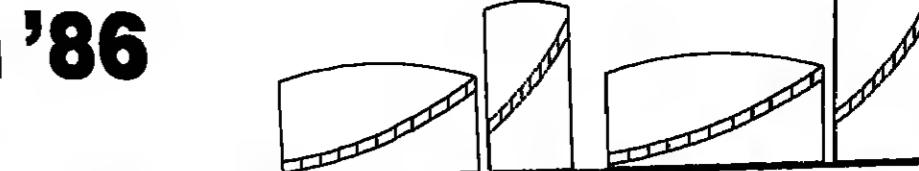
"The rush of gasoline imports early in the year helped us out significantly," says a representative of a major terminaling company. He also points out the benefit to his industry of low-priced foreign crude oil. Desirable pricing on foreign crude as compared with the domestic product led this year to an increase in imports and, consequently, greater terminal utilization. The benefits are two-fold: "The low cost of raw material helps justify processing, and then the material goes through the terminal once again as finished product," the spokesman says.

The recession and high interest rates of a few years ago enabled the chemical companies to discover that maintaining large inventories is not the most cost-effective way to do business. The resulting trend toward keeping reduced levels of material has proved to be a lasting one.

Lee Hutchins, director of marketing and planning for GATX Terminals Corporation, Chicago, cautions that the industry has seen incremental improvement, but not a major turnaround. "Increased demand picked up the underutilized tanks," Mr. Hutchins says, "but not to the point of reducing (lease) prices or encouraging the building of new tanks."

He points out that demand for storage space is still lower than it was in the early 1980's, but that over the past twelve months the demand has grown more steady. He sees this as a function of greater stability in chemical pricing and in the chemical industry in general.

Part of the reason for the improvement has been a higher volume of import and export activity. Terminal operators have cited the increased amount of business from the Middle East in the world chemical market, as well as a flurry of gasoline imports at the beginning of this year.



CHEMICALS STORAGE: Terminal operators throughout the US report a reduction in overcapacity, thanks to an increase in the overall level of chemical trade. Pictured above is Paktank Terminal's Richmond, Calif., facility.

industry, he says, "We have seen an improvement in trade, predominantly in specialty chemicals, both in terms of import and export." He cites the lower value of the dollar abroad and the generally improved economic conditions in Europe and Japan as factors contributing to the rise in trade.

Dave Glover, vice-president of sales and marketing for Paktank, says that demand for 10,000 to 12,000 barrel tanks has risen greatly at his company in the past year.

Related to the trend toward smaller tanks is the rise in popularity of specialty chemicals. GATX Terminals' Mr. Hutchins says that utilization of 3,000 to 25,000 barrel tanks has increased this year at his company. Commenting on the healthiness of the chemical

tanks, the improvement has not been drastic; rather, it has been slow and gradual.

People involved in the terminaling industry are generally cautious about the improvement that has occurred. As Powell Dufryn's corporate secretary, Ron Sprague, puts it, "The improvement in oversupply (of tankage) is very, very geographically specific. Generally, New York has seen improvement, but not our facilities in Chicago," he says. He cites the use of captive storage by Chicago-area chemical companies as part of the problem.

"New York is a very healthy port for our industry to be in," says Mr. Sprague, pointing out that the New York area is a "consumer

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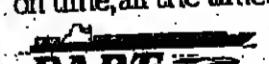
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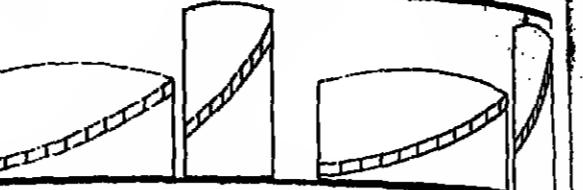
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CHEMICALS SHIPPING '86

CHEMICAL STORAGE



oriented" market, concentrating on specialties and end-products rather than more basic chemicals.

Taco Terminals' president, Garland Mendenhall, also notes that Chicago has not recovered as well as the East Coast and the Gulf. Most terminal operators in the Houston area report that they are experiencing a pick-up in utilization. The West Coast has fared better this year, trading heavily with Japan, but business has not been as steady there as it has been in the more improved East Coast.

Although chemical trade has improved this year, chemical companies have not stopped looking at ways to keep their expenses to a minimum. Their efforts to cut costs have opened up opportunities for storage terminal companies willing to expand their services.

An important service on the rise today is blending. More and more, chemical firms are looking to storage facilities for blending antifreeze and lubricating oil, as well as a growing number of specialty blends. Stricter lead controls on gasoline introduced at the beginning of this year have also opened some opportunities for blending gasoline with octane enhancers such as MTBE and toluene.

"Different suppliers are looking at how they are using their assets," says GATX Terminals' Mr. Hutchins. "Some companies have decided to invest less in some areas of production and take advantage of someone else's investment." His company is involved with blending and packaging antifreeze and lubricating oil to customer specifications. He says that this area of his company's operations has been growing in the past two years.

Mr. Sprague of Powell Duffryn has also seen an increase at his company of what he calls value-added storage, particularly in the blending of antifreeze. His company stores, blends, and packages the ingredients for the antifreeze, rather than having the client ship the raw materials from the storage facility to a separate contractor's site for packaging. "Our customer savings on intermediate transportation are tremendous," says Mr. Sprague. He notes also that the greater emphasis on coal reduction to the chemical industry will bring a continuing rise in demand for expanded terminal services of this kind.

In addition to looking for expanded services, chemical firms are also scrutinizing the insurance coverage of for-hire storage terminals. Terminal operators are finding more and more inquiries made by prospective clients regarding their coverage. As chemical values rise, the chemical industry finds itself more concerned about the safety of their investment and the quality of the services they are receiving.

The storage industry is facing higher insurance rates and more importantly for some, they are finding it more difficult to even receive coverage. Firms with large asset bases and long histories of few or no claims are faring better in the insurance market.

Tank companies are also conducting more frequent operational checks to reduce the likelihood of claims. This situation, as well as the more stringent enforcement of Federal safety and environmental regulations experienced this year, result in greater expense, largely in terms of upgrading older tank facilities to bring them into compliance with requirements of both the government and the insurance companies.

The combination of stabilization and cautious spending in the chemical industry will mean more business for those terminal operators which can accommodate the growing demand for storage of specialty chemicals, smaller capacity tanks and expanded services.

Chemical Barging

Continued from Page 40

and demand will balance and rates will increase.

In the meantime, poor returns have taken their toll. The past two years have seen a number of acquisitions. In December 1984 Ingram Industries bought Ohio Barge from United States Steel Corporation; in January 1985, Ohio River Company acquired Federal Barge Lines; and in July of this year, National Marine sold its chemical and petroleum products barge business.

As one barge aims up the acquisition boom, "One company sees an inadequate return on investment and another sees bargain hunting and long-term prospects."

Although barging is almost universally acknowledged to be the cheapest way to ship bulk commodity chemicals inland, some in the business are noticing a significant decline in the specialty chemical area.

Ron Key of the Lake River Corporation, a storage and distribution business near Chicago, says that over the last five years he has witnessed a substantial pickup in shipment by rail to his terminal, at the expense of barge traffic. Lake River denies largely with specialty-type items.

He attributes the shift mainly to better inventory control on the part of producers. He feels the slump of 1982 taught companies to operate with lower, better managed inventories, and that the quicker shipments and better timing the rail business provides is conducive to this new mentality.

Mr. Key believes specialty chemical companies are enjoying lower storage and insurance costs as well as a more tightly run business as a result of smaller inventories.

Although he is only one terminal of many, he says that by 1989, "most of my customers want to be on a rail delivery system."

Over the past year, Amerisaco Coal, Kerr-McGee and Degussa have all announced plant expansions in the area and have mentioned the waterway as influencing the decision.

Other waterways have also been affected as a result of the Tenn-Tom. Mr. Waldon says a common practice of bargers is to move tonnage North on the slack water of the Tenn-Tom and then coast back South downstream on the Mississippi.

While the barge industry is not generally known for innovation, new ideas put into action by companies like Stolt-Nielsen Inc. may help reverse the trend that terminal operators like Mr. Key have noted.

Stolt-Nielsen can arrange shipment by a fleet of "parcel-barges," vessels containing up to eight individual and isolated liquid cargo parcels. Many of these barges are equipped with individual pump systems for each parcel. Parcels can hold anywhere from 200 to 2,000 tons of liquid.

Looking at the legislative front, one major bill, the Water Resources Development Act, is poised to affect the industry. According to Jeffrey Smith, spokesman for the American Waterway Operators, an industry organization, the bill has passed through the House and Senate and is now in conference, where a final version will be hammered out.

Mr. Smith says the major difference between the two versions is in the fuel tax. The House version requires no increase while the Senate is looking to double the 10-cent-per-gallon tax.

American Waterway Operators would like to see an implementation delay of a few years, which would allow the industry a

chance to recover more fully. The overall increase of one or two cents per ton is desired. Funds raised will go mostly to construction and repair of major waterway docks and dams.

The Tennessee-Tombigbee waterway, opened to traffic in January 1985, continues to get rave reviews from its operators, barge owners and businesses that it services. Don Waldon, administrator of the waterway, says that it has moved more tonnage in the first six months of 1986 than in all of last year.

Chemicals are one of the major product areas for the Tenn-Tom, with caustic soda and ammonia listed as two big-volume items. Mr. Waldon notes that the opening of the waterway has prompted chemical plant expansion along its service area.

"How long are chemical companies going to tolerate having to pay \$2 extra per tonne in one country for dealing with slops while in another they have to pay little or nothing because it is taking no notice of the rules?" asks Mr. Flotron of Eccio.

Annex II should mean that cargo rates which have remained flat since the early '80s because of excessive overcapacity will start to rise.

"In theory, rates must go up because of the additional port costs but it is difficult to predict by how much," says Patrick Kelly of London shipbrokers, General Chemical Chartering.

One shipping company official thought that the rise in rates could be less than 10 percent. "Overall, the extra cost should be fairly marginal because the materials involved are very expensive products," he says.

Nonetheless, the new rules could change the pattern of rate levels, which so far this year in most chemical sectors have remained stubbornly low.

Ship owners had been hoping that the sharp drop in oil price earlier in the year would help the chemical shipping market. Some chemical tankers have moved into the market for clean or refined products as a result of the increase in trade, leaving less competition at the lower end of the chemical sector.

"Though it is moving in the right direction, the chemical market is still not in balance," says Mr. Sharp of Gotaas-Larsen.

Some port authorities, who will have the duty to enforce Annex II, are likely to be less strict than others.

The German and Dutch authorities, under pressure from strong domestic environmental lobby, will be adhering rigidly to the regulations, which in turn could cause some friction.

"At the moment they seem to be confined to the Far East/Europe route because the

CHEMICALS SHIPPING '86

INTERNATIONAL



Pollution Regulations

Continued from Page 34

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COATINGS & PLASTICS

PVC Producers Scheduling Price Increases for October 1

Most major producers of polyvinyl chloride are attempting to reinstitute the failed June price increase of 2 cents per pound, citing rising raw material costs and strong demand.

Shintech Inc. and Air Products & Chemicals Inc. are raising selling prices for pipe, general purpose, specialty and film grades of PVC to 30 cents, 31 cents, 32 cents and 33 cents per pound, respectively. The increases are effective October 1.

B.F. Goodrich, the largest domestic producer of the resin, is giving customers a 1-cent-per-pound TPA for the month of October, but plans to implement the full increase by November.

Formosa Plastics Inc.'s line of PVC products will sell at 29 cents per pound for pipe grade and 30 cents per pound for general purpose grade, effective October 1.

As of late last week, Vista Chemical Company, another major PVC producer, had made no moves of its own.

The June increase was an attempt by producers to move PVC prices back up to April levels. The initiative was successful at first, but prices gradually eroded over the summer to pre-increase levels.

In addition to the effect of rising ethylene prices or VCM production costs, PVC producers note that merchant supplies of vinyl chloride monomer have tightened as a result of rising export volumes.

DOMESTIC DEMAND RISING
Domestic PVC demand, meanwhile, has exceeded producers' expectations. Construction-related end-use markets have been very strong this year, led by the pipe and siding portions of the extrusion business.

Conservative growth estimates for the total PVC market this year range from 5 to 7 percent, pushed by construction-related market segments.

In response to increased demand, operators have been high this year, with most producers stating that between 90 and 95 percent of a current total effective capacity of 1.5 billion pounds is being used. Margins will have to improve, producers warn, if they are to maintain current production rates and absorb increases in raw material costs.

Through June of this year, the total domestic PVC market grew almost 10 percent over last year's figure, to roughly 3.0 billion pounds.

Extrusion demand was up 5.5 percent over the same period, moving to 2.3 billion pounds. Within that segment, siding demand shot up 9.1 percent to 244 million pounds, and tubing and rigid pipe grew 6.7 percent to almost 1.5 billion pounds.

Though it is still a relatively small portion of the total market, dwarfed by the extrusion segment, molding also had 7.1 percent growth, totalling 251 million pounds in the first six months of 1988.

Producers involved with the bottle blow molding business expect it to grow between 8 and 12 percent annually through 1990. While PET is expected to corner the soft drink packaging market, producers feel that PVC

blow molded bottles will find secure niches in both edible and non-edible bottling applications. They are currently used for bottling spring water and vegetable oil, as well as in pharmaceutical, household cleaners and laundry detergent packaging.

Producers expect this to become a more

PRICES TRENDLINES

WEEK ENDING SEPT. 19, 1988

CHANGES/UP

None

CHANGES/DOWN

None

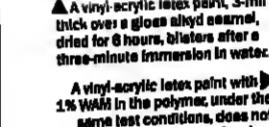
COATINGS INDEX

The Coatings & Plastics index reflects the prices of 13 representative materials in this sector and the quantity of each produced in 1985.

Sept. 19, 1988	308.4
Sept. 12, 1988	308.4
Sept. 20, 1988	308.4
Sept. 23, 1985	308.4

Chemical Prices Start on Page 52

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COATINGS & PLASTICS

mostly in response to depressed phenol prices and foreign competition. There has been no real change in prices since then.

Although major phenol producers announced a 2c. per pound increase to be effective by the third quarter, it did not hold.

Although selling prices are hard to pin down, considering the variety of grades within each category, one source says that high-volume selling prices for commodity liquid phenolic resins are currently in the low 80c. per pound range.

Semi-solid types (80 percent solid content) sell for 30c. per pound; specialty pulverized solid grades are selling in the 70c. to 80c. per pound range.

While demand for phenolic resins was up almost 7 percent in the first half of this year to 1.4 billion pounds, producers expect a falloff in the second half. For the year as a whole, demand is expected to be the same, or

slightly below, last year's level of 2.8 billion pounds.

Capacity utilization is estimated to be around 75 percent of total nameplate. In June, Reichhold Chemicals sold its phenolic resins division to BTL Specialty Resins, a division of BTL Industries, formerly Bakelite Ltd. of Canada; the firm is not planning any changes at this time although a rationalization study is underway. Georgia-Pacific plans to expand its Beaver Creek facility by the end of the year.

POLYESTER RESINS — Reichhold Chemicals Inc., a major producer of unsaturated polyester resins, will be hiking selling prices for its lines of the resins, effective October 1.

Selling prices for general purpose unsaturated polyester resins will be increased 2c. per pound for all shipments on and after October 1.

Specialty resin grades prices will be raised in varying amounts, depending on grade and volume of purchase.

Prices for polyester resins, following

lower demand, fall 5 percent over the course of 1986. Driven by low crude oil values, lower demand and overcapacity they fell an additional 7 percent by the end of April, 1986 (CMR 4/28/86, pg. 23). By the end of the second quarter, they were a total of 10 to 12 percent lower than they had been in second quarter 1985 (CMR 6/25/86, pg. 29).

Customer demand for pass-throughs of lower crude oil costs had been a primary motivating factor, despite the fact that costs for several key ingredients dependent on natural gas, rather than crude values had remained stable.

Producers hope that this some customer psychology may now work in their favor, as styrene monomer price increases and higher glycol costs may lead to a more receptive environment for a price increase.

One producer reports that styrene monomer supplies have been very tight lately, as scheduled turnaround and operational problems have developed for some plants, further contributing to the need to raise polyester prices.

By mid-August, selling prices were said to

have firmed somewhat (CMR 8/14/86, pg. 30).

POLYETHYLENE — Dow Chemical Company will be raising list prices for its "Dowlex" lines of specialty extruded polyethylene for the first time in the last few years since these products were introduced.

The company is increasing prices for less than-truckload quantities, effective October 1.

Volumes of 25,000, 10,000 and 1,000 pounds of "Dowlex 3010" will sell for 58c., 84c. and 85c. per pound, respectively. Prices for similar volumes of "Dowlex 3030" will be 52c., 84c. per pound, and 85c. per pound, respectively.

PRIME PIGMENTS

ANTIMONY OXIDE — Effectively September 12, Asarco Inc. lowered list prices for its antimony oxide products by 5c. per pound. New prices for its high and ultra-high, low tint, and ultra-pure grades are \$1.35 per pound, \$1.40 per pound, and \$1.50 per pound, respectively.

Other domestic producers feel that this move is unrelated to overall market conditions, and speculate that it must be due to excess inventory. This is the third time Asarco has changed antimony oxide prices this year.

TITANIUM OXIDE — Kemira Oy, Inc. will be raising list prices for its line of rutile and anatase titanium oxide, effective October 1.

This follows price increase announcements by virtually all domestic producers and distributors of the pigment. earlier, SCM and DuPont announced increases (CMR 9/1/86, pg. 33). They were followed by Holta-Chem and Kerr-McGee Inc. (CMR 9/18/86, pg. 35). National Lead Industries initiated its move to increase prices in the second quarter of this year (CMR 6/21/86 pg. 29).

Kemira's rutile grades have been hiked to 1c. per pound, and will now sell for 84c. per pound. Its water-dispersible anatase grades have been increased 5c. per pound to 78c. per pound, and its treated anatase grades by 4c. per pound, to 84c. per pound.

Although the company continues to import material from its parent company to Finland, its Savannah, Ga., plant, acquired from American Cyanamid, is said to be running at full capacity. Operational expansions are planned, but are still in the proposal phase. Like all producers involved in this market, the firm is sold to be running at close to full capacity both here and abroad to keep up with demand.

ZINC OXIDE — St. Joe's Minerals Company and Pacific Smelting Company have both followed New Jersey Zinc Company's move to increase zinc oxide prices, effective October 1.

On September 11, St. Joe Minerals announced its plans to raise list prices for its zinc oxide products by 8c. per pound. New prices for its French process grades 500 and 900 will be 52c. per pound and 53c. per pound, respectively.

Last Tuesday, Pacific Smelting said it will be hiking prices for its activated and French-process grade products by 5c. per pound. Its activated grade will now sell for 64c. per pound, its French-process grade for 65c. per pound.

These firms explain that recent dramatic increases in zinc metal prices provided the major impetus for the price change. Where, in the first quarter of this year, they ranged near 30c. per pound, they steadily increased, shooting up dramatically within the past two months to 47c. per pound.

Demand for zinc oxide is expected to equal last year's figure, but not surpass it. Last year was a good year for this mature market.

MISCELLANEOUS

SILICA PRODUCTS — Following Dr. Pont's move, PQ Corporation will be raising list and selling prices for its "Nyacol" line of colloidal silicas.

Effective October 8, the list price for "Nyacol 9850," a paper frictional agent, will be increased 8.5 percent to 84c. per pound for bulk and 73.2c. per pound truckload.

Prices for the company's other "Nyacol" lines, will be raised 7 percent, effective the same date.

New list prices for bulk and truckload quantities of its investment grade and grade 21 and 85c. will be 84c. and 73.2c. per pound, respectively.

A significant addition to the company's line, however, is on the horizon. After years

of false starts, Toth Aluminum Company of Metairie, La., is coming on stream with up to 20 million pounds of aluminum chloride capacity. The Toth product is manufactured by a proprietary process involving reaction of chlorine with aluminum-rich clays.

According to Toth, the company's first aluminum chloride sale was to Grant Chemical, a division of Ferro Corporation in nearby Baton Rouge.

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HEAVY & AG CHEMICALS

Aluminum Chloride Makers See Gradual Market Turnaround

North American anhydrous aluminum chloride producers are optimistic that the industry is turning around after years of shrinking demand and soft pricing, although there could be more trouble down the road.

Demand for aluminum chloride was either flat or down during most of the early 1980's. The demand slide, producers say, came primarily because many makers of ethylene oxide, the styrene precursor, moved away from aluminum chloride-catalyzed production. Similarly, some chloride process titanium dioxide capacity has switched to non-aluminum chloride based processing.

Demand shrinkage has had its impact on the market's players. In early 1984, Vanchlor Company bought ACL Industries of Elkhorn, Md., and moved the equipment to its Lockport, N.Y. location. Much of the capacity was closed permanently, according to Vanchlor.

Similarly, in early 1985, Welland Chemical in Sarnia, Ontario, bought DAL Specialties, Rensselaer, N.Y., and shut down that facility. The market now stands at three commercially active players, with Argus Division of Wilco Corporation being the third and largest producer, St. LaPorte, Tex., and Phillipsburg, N.J.

With the size of the business now pared down, producers say that demand is looking up. The most optimistic marketer feels 1986 growth will be between 2 and 3 percent, another considers this year to be about even with 1985 but sees new applications on the horizon.

Increased demand is linked mostly to growth in the titanium dioxide and styrene industries. Government figures show that US titanium dioxide production through June 1986 is up over 12 percent, compared to the same period last year. Styrene production is also up, by almost 2 percent.

HIGH OPERATING RATES

Moreover, at least one aluminum chloride marketer feels high operating rates for both these products will ensure that no additional production changes precluding aluminum chloride use will take place for another year or two.

Also cited as significant but smaller volume growth areas are catalyst uses in the pharmaceutical and specialty chemical markets.

Pricing, producers say, is the main sticking point today, with the business "running on very thin margins" according to one.

The April 1 price increase of 3.5 cents per pound is generally regarded to have succeeded. The hike, however, was not much more than a raw material price passalong, producers claim.

Price histories for aluminum and chlorine, the product's two raw materials, back this contention up. Aluminum prices, according to one analyst, are on the average about 8 cents per pound higher this year as compared to last. Similarly, chlorine prices have increased over \$20 per ton since the beginning of the year.

Aluminum chloride prices are close to but not quite at list levels. Bulk shipment prices list at 48 cents per pound, f.o.b. plant, but are said to be selling between 43 and 47 cents per pound. The list price for drummed material is 52 cents per pound; selling prices are discounted here as well.

Current capacity in the industry is listed as close to 55 million pounds, with US demand estimated between 44 and 48 million pounds.

One producer notes, though, that a good amount of listed capacity may actually be non-functional at present. He feels that three or four years of shrinking demand has resulted in production reactors that are potentially operational but currently idle. Consequently, he considers supply and demand to be in a good balance at present.

A significant addition to the capacity picture, however, is on the horizon. After years

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MAGOX® 98 MAGOX® 95 MAGOX® 90 MAGNESITE 33	Miscellaneous	Magnesite is used as an adsorbent, flocculent, filter, to make phenolic resins, to precipitate heavy metals from plant effluent and for insulation. Also used in the production of oil additives, and anti-corrosive coatings.

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HEAVY CHEMICALS

threat of import material from the Caribbean.

CAUSTIC SODA — Holtrochem Inc., a major distributor of caustic soda, has announced an increase in the price of its caustic soda solution, effective immediately and as contracts permit, on a case-by-case basis.

A reason for the increase, Holtrochem notes that caustic soda producers have increased prices and that a significant amount of chloralkali has been recently rationalized by Dow Chemical at Freeport, Tex., and DuPont at Corpus Christi, Tex. The company also points out that Occidental Chemical's recent acquisition of Diamond Shamrock's chloralkali business has eliminated one player from the marketplace.

Holtrochem feels that producer invento-

ries of caustic soda are in better balance than they were earlier in the year. Inventory overage should not be a problem in the near future, the company believes, because the construction industry has peaked for the year, and chlorine demand should decline in new building stocks off. Slowdown in the decline of interest rates should also dampen new construction, the company says.

According to Holtrochem, now that prices are no longer declining, and may be bumping upward, inflation should be picking up, resulting in the usual slowdown in business that affects chlorine before construction, the company says.

SULFUR DIOXIDE — Essex Industrial Chemicals says it has sent letters to customers notifying them of a \$10 per ton increase in the price of sulfur dioxide. The new price is \$230 per ton, f.o.b. plant, and effective immediately, or as contracts permit.

Essex joins most other major marketers

raising sulfur dioxide prices.

ZINC — Falconbridge Ltd. said last week that effective immediately, for sales outside North America, the base selling price for "Kidd Creek" brand zinc metal has been increased to \$920 (US) per ton from \$880 (US) per metric ton. Falconbridge produces zinc at its Timmins, Ontario, metallurgical site.

Fluorocarbon Group

Continued from Page 3

coordination of international scientific research on the ozone depletion theory, and the avoidance of further unilateral regulation by the US or regulation of specific CFCs.

Mr. Barnett emphasizes that international cooperation is vital because the US accounts for only one-third of CFC production capacity in the free world. The quantity of CFC output by Eastern Bloc nations is unknown, he adds.

He says the policy statement is consistent with the approach taken by the European Economic Community.

CFCs are utilized in numerous products and uses, including air conditioning and refrigeration systems. The annual value of goods and services which depend on a varying degree upon CFCs exceeds \$28 billion, and more than 780,000 US jobs are related to CFC uses.

The major US producer is DuPont, Allied, Pennwalt, Kalsc and Raco.

Environmental groups hailed the alliance's statement as a step forward. "I welcome their recognition that it is an issue requiring international cooperation," says Irving Mintzer, an ozone specialist for the World Resources Institute. "There are some real positive aspects to this."

EPA also lauded the group's announcement. "It's a significant shift from their position that science doesn't tell you anything," says agency spokesman Christian Rice.

Sulfur Removal Unit Starts in Michigan

Michigan Gas Processors Company, Tawas City, Mich., has fully brought on stream a 14-long-ton-per-day sulfur extraction plant at its Manistee gas plant. The facility uses the autocirculation "Lo-Cat" hydrogen sulfide oxidation process, designed by ARI Technologies, Inc., Chicago, Ill. The unit is capable of extracting all of the hydrogen sulfide and mercaptans found in natural gas wells, according to ARI.

The "Lo-Cat" process starts with hydrogen sulfide and carbon dioxide being removed from the natural gas after treatment with Union Carbide's "Ucarso" LE-701, amines capable of separating the two gases from the main gas flow. The H₂S and CO₂ or acid gas is then reacted with a catalyzed iron solution that breaks the hydrogen sulfide down to elemental sulfur and water. Carbon dioxide is vented into the atmosphere.

ARI says the process is currently competitive with the widely-used Claus method of sulfur removal in small gas flows. It is also useful as a secondary treatment system for separating hydrogen sulfide not removed by other processes. It is being used by Michigan Gas Processors, ARI says, because the process is able to upgrade sour gas found in Michigan and purify it enough to meet the pipeline specifications of Michigan Consolidated Gas Company.

PERFUMES & FLAVORS

Continued from Page 28

"some allowed large portions of the crop to rot on the trees," he says.

Since the dollar has weakened, however, the Calabrian growers have regained interest. Now a smaller harvest, 80 tons for 1985 compared to a yearly average of 110 to 120 tons, coincides with climbing prices. "The quantity of the new crop bergamot oil should be up," says a broker.

PETITGRAIN OIL — Petitgrain oil prices remain at \$8.75 per kilo; the same price it has had for the past ten years, according to one trade source. "It is a very low price," he says, "and remains there because the Paraguayan, the main producers, are trying to prevent the insinuation of synthetics into the market." Limolyl acetate and linalool are both aroma chemical substitutes for petitgrain oil in the uses of soap and detergents.

An essential oils dealer concurs on the low price, but disagrees that synthetics may affect the market: "There is a lot of petitgrain oil around, plenty in stock here in the US and

available in South America at low prices. We don't need to reconstitute it."

Until now, therefore, trade sources agree that Paraguay's policy of restricting the size of the harvest, despite their plenitude of bitter orange trees, in order to retain petitgrain's place in the market has met with success.

SEEDS & SPICES

CUMIN SEED — Indian and Iranian cumin seed, following an August firming trend, have leaped from \$3c. and 73c. per pound respectively, to \$1.05 per pound in the last week.

Turkish cumin seed gained 34c. to 98c. per pound during the same period. The price advances have been attributed to a limited Turkish crop and increasingly scarce supplies elsewhere. Chinese cumin seed has followed suit, joining the Indian and Iranian level of \$1.05 per pound.

OREGANO — Mexican oregano prices are not advancing to the extent originally expected, according to a spice broker. With the shortage of Greek and Turkish in mind, Mexican producers were thought to double their prices from \$1.05 to \$2.10 per pound next week.

Yet a lack of confirmation of the European crop's being contaminated has led Mexican suppliers to scale down their pricing outlook. "We will sell our oregano in the \$1.40 to \$1.50 per pound range," says a Mexican grower.

Beating the expected influx of Greek and Turkish material now seems to be the first concern: "We need to choose which plants, clean them, and have them in the market as soon as possible, in three weeks," he says.

POPPY SEED — Dutch Poppy advanced to 59c. per pound last week, a gain of over 80 percent since June's quote of 36c. per pound. The Netherlands growers reduced their August/September crop in a successful bid to strengthen prices. Turkish and Australian poppy prices have benefited as well, firming steadily with the Dutch to 52c. and 53c. per pound respectively.

House Unit Okays

Continued from Page 5

cost of Conrail's \$3.2 billion in revenues. Chemicals account for a similar percentage of NS's total revenues.

The proposed sale of the freight railroad is expected to be incorporated into comprehensive budget reconciliation legislation which must be passed before Congress adjourns for the November elections.

Before approving the bill, the committee eliminated several rate-regulation provisions that had been added to the legislation at the urging by the commerce, transportation and tourism subcommittee.

After the subcommittee's vote, Transportation Secretary Elizabeth Dole urged energy and commerce chairman John Dingell, (D-Mich.) not to use the Conrail bill as a vehicle to modify the 1980 Staggers Act which deregulated the railroad industry.

Such provisions, she warned, might draw a White House veto, even though the Reagan Administration wants to put Conrail into private hands.

Mrs. Dole said the less-regulated environment created by the Staggers Act gave Conrail and other railroads necessary pricing and service flexibility to enable them to better compete with the trucking industry.

Advocates of the Staggers changes, led by Rep. Billy Tauzin (D-La.) had argued that Congress should roll back rail decontrol to protect captive shippers who depend largely on a single railroad to haul their commodities.

Captive shippers of fertilizers and dry chemicals have complained that the Interstate Commerce Commission has failed to protect them against unreasonable rate increases since deregulation. Rep. Tauzin's new proposal would have given ICC new powers to protect shippers hurt by such market dominance.

But Reps. James Florio (D-N.J.) and Norman Lent (R-N.Y.) argued that to consider extensive new railroad regulation at this late date in the congressional session could jeopardize the Conrail bill.

"We wanted a clean Conrail bill," said Federal railroad administrator John Riley. "What we got was closer to that than any other available amendment." The FRA is a division of the transportation department.



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chemical products

**Sulfur Rules Give Industry
'Hobson's Choice,' Says CIBO**

Environmental Protection Agency is threatening to hand American industry a Hobson's choice between unaffordable boiler emissions controls and limited fuel sources in order to obtain minuscule environmental improvements, a group of industrial boiler owners says.

The Council of Industrial Boiler Owners (CIBO), representing 50 US industrial firms that rely on a variety of fuel sources for their operations, says that proposed limitations on sulfur emissions from small, new, industrial boilers that burn coal or oil are unfair, unrealistic and untenable.

The proposals, known as New Source Performance Standards (NSPS) for Industrial boilers, would require 90 percent reductions in sulfur emissions from new equipment even though the agency estimates such equipment will contribute at most only 1.5 percent of total US sulfur emissions, CIBO says. Utility emissions, which account for far more sulfur in the air, are not as tightly regulated, CIBO adds.

STRINGENT REGULATIONS

William B. Marx, president of CIBO, says, "The only way for us to meet these regulations and still be able to burn coal or oil will be to add extremely costly and unreliable desulfurization scrubbers to new boilers. Scrubbers cost as much as the boiler itself — doubling the cost of even a small unit to perhaps \$4 million — and they cannot hold up to the 98 percent reliability demand of industry."

"Most of American industry will be forced to go off coal and oil altogether as they expand or replace existing boilers," Mr. Marx asserts.

"They will be forced to burn natural gas, even though the ability to obtain it on a long-term, non-interruptible basis is a matter of debate. Furthermore, the 1978 Fuel Use Act prohibits the use of natural gas as a boiler fuel unless an exemption is obtained. Industry needs more — not less — flexibility to obtain the most economic fuel for its boilers."

Ironically, the overly stringent NSPS will encourage industry to extend the lives of existing boilers, which are dirtier and less efficient than new boilers on the market today, Mr. Marx says. "The rule actually will impede improvement in air quality," he says. "EPA clearly has not thought this rule through rationally."

Boilers create steam for industry's process uses, space heating and electricity production.

They burn not only fossil fuels but also plant-generated wastes and account for about two-thirds of the fuel burned by industry.

The proposal discriminates against industry by requiring it to meet 90 percent sulfur reduction regardless of the fuel's sulfur content, while earlier NSPS allowed utilities burning low-sulfur coal to reduce emissions by only 70 percent, CIBO says. Utility boilers are about 30 times as big as industrial units, and hence emit more.

CIBO also comments that utility boilers have economies of scale that industrial units lack, making scrubbers proportionately less costly for them, and that utilities do not need the same reliability industry needs in boilers because utilities have interconnections through which to get emergency power in the event that a boiler scrubber breaks down, as they often do.

CIBO proposes the following NSPS requirements:

— Continuation of the current emissions limit of 1.2 pounds sulfur per million Btu heat input for industrial boilers larger than 250 million Btu.

— A new emissions limit of 1.6 pounds sulfur per million Btu for small boilers (100 million to 250 million Btu).

— No percentage reduction requirement, thereby allowing industry the freedom to choose the most economic fuel sources and most appropriate emission control technologies — including emerging technologies — to meet the emissions caps.

"This NSPS fails to meet criteria under the Clean Air Act — reaffirmed in court — for EPA to base its regulation on a cost-effective, achievable, reliable and adequately demonstrated control technology," Mr. Marx concludes.

**CTFA Seeks
FDA Approval
On Eye Colors**

Cosmetic, Toiletry & Fragrance Association has asked Food & Drug Administration to approve four more colors for use in eye area products.

The colors (FD&C Red 40 and its lakes, FD&C Yellow 6, FD&C Blue 1 and D&C Green 5) are all permanently listed for non-eye area cosmetic uses.

CTFA has also petitioned for use of the yellow 5 lakes and blue 1 lakes, which are provisionally listed for non-eye area cosmetic uses.

The petition marks the first time CTFA has requested that the agency approve new uses for permanently listed colors. Previous color additive actions by the trade group focused on defending existing uses for color additives that FDA had provisionally listed pending completion of safety tests.

If CTFA's petitions are granted, cosmetic manufacturers may expand their eye color palette for the first time since 1968.

The technical data, which seek to demonstrate that the four color additives are safe for use in eye area products, were developed by CTFA and its members in conjunction with the Certified Color Manufacturers Association and FDA.

"These petitions are the result of a tremendous cooperative effort by the two trade associations, their members and FDA," CTFA president Ed Kavanaugh commented. "By working together these groups accomplished an impressive goal."

"This use of these shades would profoundly affect the US eye cosmetic market," an industry analyst observes. "They would significantly increase the number and quality of colors available in eye area cosmetics."

"Using the new additives, we can develop eye cosmetics that are more vivid, more true and have more depth than any on the American market," the analyst asserts.

The colors are all reported to be in use in European eye area products. If the petition is granted, the shades would be available to American consumers as well.

**Distributors'
Chemical Sales
Due to Grow**

average growth in distributor sales through 1990.

Two primary factors contributing to the higher growth are the faster overall growth of these industries and the increasing focus placed on these industries by distributors, Kline says.

**DOE Steady
On Oil Buys**

Department of Energy will not accelerate the purchase of crude oil for the Strategic Petroleum Reserve unless prices decline, Secretary John S. Herrington says.

He says that while DOE is soliciting bids from domestic producers, it is continuing to negotiate terms with Mexico, the most recent supplier to the 505-million-barrel reserve in salt domes on the Gulf Coasts of Texas and Louisiana.

Secretary Herrington says he would like to increase the reserve at the rate of 100,000 barrels per day, the practical limit of intake capacity, but "the price may be a little too high to go to that large a purchase."

The current congressionally authorized limit, which took effect September 1, is 35,000 barrels per day. Mexican shipments have been running at 50,000 barrels per day until the end of August.

Crude oil is currently priced around \$18 per barrel compared with about \$28 late last year. Secretary Herrington did not indicate how far the price would have to fall to make him increase purchases.

But he did say, "It did not make sense to me to see oil at \$9 and \$10 per barrel and not be buying 100,000 barrels a day" earlier in the year.

At the Secretary's urging, President Reagan last month reversed his position against additional purchases and told Mr. Herrington he could buy in excess of 35,000 barrels per day if the price was attractive.

President Reagan endorsed the congressional goal of a 750-million-barrel stockpile, a goal set in the late 1970's.

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CHEMICAL PRICES

WEEK ENDING SEPTEMBER 19, 1988

This chemical prices section contains spot quotations and/or list prices of suppliers of chemicals and related materials on a New York or other indicated basis. The listings are based on price information obtained from suppliers. Note that posted prices do not necessarily represent levels at which transactions actually may have occurred. They do not represent bid and asked prices, nor a range of prices over the week. Price ranges may represent quotations of different suppliers as well as differences in quantity, quality and location. All matters under this heading are fully covered by copyright.

An index of weekly chemical market reports is on the back cover.

A

2-Amino-3-methyl-1-propanol, 95%, dms, c.l., l.o.b. works, lb.	95	-	Aniso ebed, Egypt, bgs	lb.	63	-	Boron oxide, grd, dms, c.l.	100-lb. bags	31.25	-	Boron carbide, std, generator size, bulk, c.l., o.b. works, ton	237.00	-
tanks, l.o.b. works, lb.	98	-	Spanish, bgs	lb.	1.00	-	bulk, c.l., works, ton	182.00	-	Calcium carbonate, pulverized, 325- mesh, bgs, bulk, l.o.b. works, ton	345.00	-	
c-Aminophenol, dms, l.o.b. Charlotte N.C.	3.95	-	Turkish, bgs	lb.	.57	54	100-lb. bags	30.00	-	sturries, 54% solids, same basis, ton	187.00	-	
p-Aminophenol, l.i. dms, l.o.b. Releigh, N.C.	7.15	-	Anisole, imp, cns, dms	lb.	4.93	-	Boron silicate, bals, l.i. o.b. dest., ton	1.05	-	72% solids, same basis, ton	88.00	-	
p-Aminophenol, acid, USP, 50-lb. dms, l.o.b. 11.	18.50	-	p-Anisole, imp, cns solnt, dms, works	lb.	2.27	-	Boron silicate, USP, X-ray diagnosis	ton	-	quicklime, gran, ind, bulk, work-	67.00	-	
Ammonia, anhyd, fertilizer, wholesale, tanks, div, Midwest terminals	185.00	170.00	Antimony metal bulk, c.l., mfrs, flakes, same basis	lb.	1.90	-	Boron silicate, 25 kg bgs, ton	58.12	-	e, ton	67.00	-	
tanks, l.o.b. Gulf Coast, ton	80.00	85.00	Antimony metal bulk, c.l., mfrs, 175-lb. cans, E.O. of Rockies	lb.	1.70	-	Boron silicate, 50-lb. bags, ton	58.12	-	Calcium carbonate, coated, bgs, c.l., works, ton	.0742	1350	
aqueous, 26.4% NH ₃ , same basis, tanks, l.o.b. eqvnt, 100-lb. bags, Rock-	260.00	315.00	Antimony oxide, high-unt, bgs, c.l., mfrs, 11-lb. works	lb.	1.35	1.35	Boron silicate, 80-lb. bags, l.i. o.b. works	lb.	4.03	-	Calcium carbonate, precip, medium, dms, c.l. works, ton	370.00	430.00
Ammonium, fluor (see Ammonia, aqueous)	-	-	Antimony trichloride, anhyd, solid, 100-lb. bags, ton	lb.	3.80	-	Boron silicate, bulk, c.l., mfrs, 100-lb. bags, ton	3.47	-	Calcium carbonate precip, medium, bgs, c.l. works, ton	95.00	140.00	
Ammonium, fluor, granulating grade, c.l., l.o.b. works	28.60	-	Apomorphine hydrochloride, NF, dms, 100-lb. bags, ton	lb.	1.85	2.15	precip, dense, c.l., surface treated, bgs, c.l. works, ton	185.00	-				
Ammonium, std, white (see Ammonium chloride, com.)	-	-	Apricot kernel oil, dms	lb.	1.05	-	Boron silicate, CP, 1,800-lb. cys, works	lb.	3.80	-	Calcium carbonate, coated, bgs, c.l., works, ton	67.00	-
Ammonium, bborate, gran, dms, c.l., l.o.b. works	80	-	Arabic gum, powd, bgs	lb.	2.00	2.15	Boron silicate, black ash, dms, c.l., l.o.b. works	lb.	4.03	-	Calcium carbonate, precip, medium, dms, c.l. works, ton	.0742	1350
Ammonium bborate powder, 56% parb, higher	-	-	Arabic gum, sprayd, bgs	lb.	1.75	2.15	Boron silicate, 80-lb. bags, l.i. o.b. works	lb.	3.47	-	Calcium carbonate, precip, medium, dms, c.l. works, ton	370.00	430.00
Ammonium bicarbonate, 100-lb. dms, c.l., l.o.b. works	26.00	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.00
Ammonium bchromate, photo-litho grade, gran, 100-lb. bags, same basis, 100-lb. bags, ton	22.00	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.00
Ammonium acetate, basic, dms, l.o.b. works	3.25	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.00
Ammonium acetate, amyd, 100-lb. bags, c.l., l.o.b. works	53	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.00
Acetone, 100-lb. bags, l.i. o.b. works	1.28	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.00
Acetic acid, tech, tanks, div, E. o.b. 43/2	.25	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.00
Acetic anhydride, tanks, div, E. o.b. 43/2	.28	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.00
Acetic anhydride, price, 10% higher in West	-	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.00
Acetone, 100-lb. bags, l.i. o.b. works	1.28	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.00
Acetone, 100-lb. bags, l.i. o.b. works	1.28	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.00
Acetone, 100-lb. bags, l.i. o.b. works	1.28	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.00
Acetone, 100-lb. bags, l.i. o.b. works	1.28	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.00
Acetone, 100-lb. bags, l.i. o.b. works	1.28	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.00
Acetone, 100-lb. bags, l.i. o.b. works	1.28	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.00
Acetone, 100-lb. bags, l.i. o.b. works	1.28	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.00
Acetone, 100-lb. bags, l.i. o.b. works	1.28	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.00
Acetone, 100-lb. bags, l.i. o.b. works	1.28	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.00
Acetone, 100-lb. bags, l.i. o.b. works	1.28	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.00
Acetone, 100-lb. bags, l.i. o.b. works	1.28	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.00
Acetone, 100-lb. bags, l.i. o.b. works	1.28	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.00
Acetone, 100-lb. bags, l.i. o.b. works	1.28	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.00
Acetone, 100-lb. bags, l.i. o.b. works	1.28	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.00
Acetone, 100-lb. bags, l.i. o.b. works	1.28	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.00
Acetone, 100-lb. bags, l.i. o.b. works	1.28	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.00
Acetone, 100-lb. bags, l.i. o.b. works	1.28	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.00
Acetone, 100-lb. bags, l.i. o.b. works	1.28	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.00
Acetone, 100-lb. bags, l.i. o.b. works	1.28	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.00
Acetone, 100-lb. bags, l.i. o.b. works	1.28	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.00
Acetone, 100-lb. bags, l.i. o.b. works	1.28	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.00
Acetone, 100-lb. bags, l.i. o.b. works	1.28	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.00
Acetone, 100-lb. bags, l.i. o.b. works	1.28	-	Aspirin, corn, dms	lb.	1.50	-	Boron silicate, 500-lb. bags, l.i. o.b. works	lb.	2.35	-	Calcium carbonate, precip, medium, bgs, c.l. works, ton	95.00	140.0

CHEMICAL PRICES

WEEK ENDING SEPT 19, 1986

Chlorinated paraffin, Zone 2 prices are 1c. per lb. higher and Zone 3 prices are 2c. per lb. higher. Higher and L.L. drum prices are 2c. per lb. higher.

Chlorinated rubber, 5, 10, 20 gals., bgs., l.b. 1.66 -
40 gals., bgs., l.b. 1.92 -
125 gals., bgs., l.b. 2.60 -
300 gals., bgs., l.b. 2.75 -

Chlorine, tank single units works, f.o.b. 195.00 200.00

Chloroform, acid, mono, high purity, 1-kilo, 88% bulk, f.o.b. 56 -

2-Chloro-4-aminotoluene, tech., l.b. 1.88 -

o-Chlorophenol, liquid, dms., l.b. 1.83 -

works, tanks, l.b. 1.85 -

P-Chlorophenol, solid, l.b. 1.70 -

Bags, dms., l.b. same basis, 2.00 -

o-Chlorophenoldehyde, dms., l.b. works, 2.45 -

p-Chlorophenoldehyde, dms., 2.000 lbs. more works, 3.84 3.85

o-Chlorophenol, dms., l.b. 3.90 -

p-Chlorophenol, dms., 500-lb. bags, dms., l.b. 1.69 2.25

Chlorofrom, tank, dist., chd. 34% -

tech. consumers, tanks, chd. 34% -

NF tank, min. consumer, 4,000 gals., chd. 35% -

2-Chloro-4-fluorophenol, paste, commodity basis, dms., l.b. 3.06 -

powder, 500-lb. bags, dms., l.b. 3.15 -

4-Chloro-2-fluorophenol, paste, 17.5% mol. wt., commodity basis, dms., l.b. 2.25 -

powd., same basis, l.b. 2.70 -

o-Chlorophenol, dms., l.b. 2.00 2.40

p-Chlorophenol, dms., l.b. 1.25 1.70

Chlorophenol, cont'd., 1,500-lb. cans, f.o.b. works, 1.25 -

Chlorosulfonic acid, tanks, l.b. 1.98 -

p-Chlorotoluene, tech., tanko, works, 1.00 -

Chlorotoluene, dry, 40,000 units pergram, kilo, 200.00 -

Choline chloride, cryst., 99% min. 50 kgs., l.b. 8.90 -

Choline chloride, l.b. 8.90 -

Choline chloride, grade, 70%, aqueous, l.b. 1.25 -

Choline chloride, l.b. 1.25 -

Choline chloride, l.b. 1.18 -

Choline chloride, 85% min. 50 kgs., l.b. 8.00 -

Chromic green, CP, extra light, bgs., c.l. 1.68 -

light, bgs., same basis, 1.70 -

medium, bgs., same basis, 1.72 -

extra deep, CP, same basis, 1.74 -

Chrome orange, CP, bgs., divd. E, o.l. Rocks, 1.83 .88

Chrome yellow CP, bgs., divd. E, of. Rocks, 1.08 1.18

Chromic acid, 80% min. 50 kgs., l.b. 1.18 -

grd., same basis, l.b. 1.25 -

Chromic acetate, dms., 600-2,000-lb. bags, dms., l.b. 1.10 -

Chromic fluoride, dms., l.b. 1.05 -

works, 1.05 -

Chromic nitrate, 40,000 units pergram, kgs., l.b. 4.00 -

Chromic oxide, 500-lb. bags, dms., l.b. 1.10 -

Chromic oxide, 500-l

CHEMICAL PRICES

WEEK ENDING SEPT 19, 1986

Hydrochloric acid, 20% Ba. tanks, works, East. ton 55.00 85.00 Midwest. ton 60.00 70.00 Gulf Coast. ton 57.00 - West Coast. ton 90.00 105.00 22% acid, same basis, East. ton 68.00 78.00 Midwest. ton 68.00 70.00 Gulf Coast. ton 63.50 - West Coast. ton 100.00 115.00

NOTE: Prices very and often reflect freight equalized to point of production and location.

Hydrochloric acid, anhyd. 25 kilos or more, gran. .70 -

Hydrofluoric acid, anhyd. (see Hydrogen fluoride)

Hydrofluoric acid, aqueous, 70% tanks, f.o.b. 1.00 -

Hydrofluoric acid, 15% gran. f.o.b. 1.00 -

tanks, 100% basis, works. ton 190.00 210.00

Hydrogen chloride, anhyd. 500-lb. works, f.o.b. 7.00 -

600-lb. works, c.i.f. same basis. ib. .65 -

Hydrogen chloride, anhyd. tube trailers, seller's trailer, min. 100,000 lbs. a year. ib. .37 -

tube trailers, buyer's trailer. ib. .27 -

Hydrogen chloride anhyd. tanks, works, East. ton 270.00 -

Hydrogen cyanide, 99.5% tanks, works. ib. .50 -

Hydrogen cyanide, tank cars, c.i.f. 1.00 -

Hydrogen cyanide, tank cars, f.o.b. 8875 -

Hydrogen cyanide, 35% tank, tanks, works, f.o.b. 2325 -

50% tankcars, f.o.b. 3225 -

70% tankcars, f.o.b. 45 -

Hydrogen sulfide, 98.25% min. tanks, works. ib. 1.25 -

170% basis, tanks, works. ib. 2.27 -

Hydrogen sulfide, photo grade, consumers. c.i.f. 1.00 -

tech. dms. c.i.f. 1.00 -

Hydroxyacetic acid, tech. 70%, tanks, Bell's, W. Va. ib. 40% -

Hydroxylammonium sulfates, dms. f.o.b. ib. .83 -

p-Hydroxybenzoic anhydric acid (see p-Phenolsulfonic acid)

Hydroxybutyl methylcellulose (visc. 30,000 cps.) 50-lb. bags, f.o.b. 1.00 -

30,000 lbs. min. divd. ib. 2.10 -

Hydroxybutyl methylcellulose, 1.0. 15.55 -

p-Hydroxydiphenylamine, dms. f.o.b. 4.10 -

Hydroxydronnell, natural, dms. 9.40 -

pure, dms. ib. 13.80 -

extra grade, dms. ib. 14.80 -

Hydroxyethyl cellulose, 1.0. 9.50 -

Hydroxyethyl cellulose, 1.0. 2.07 -

Hydroxyethyl methylcellulose (visc. 5,000 through 45,000 cps.) 50-lb. bags, f.o.b. 1.0. 30,000 lbs. min. divd. zone 1. ib. 2.73 -

Hydroxypropyl methylcellulose, premium, U.S.P. (visc. 4,000 cps.) 15,000 lbs. min. divd. ib. 2.87 -

Hydroxypropyl methylcellulose (visc. 4,000 cps.) 15,000 lbs. min. divd. zone 1. ib. 2.17 -

Hydroxypropyl methylcellulose (visc. 50 through 100 cps.) 50-lb. bags, f.o.b. 1.0. 30,000 lbs. min. divd. zone 1. ib. 2.64 -

8-Hydroxyquinolines (see Quinoline)

Phosphorous acid, purf., 50% dms. c.i.f. works. ib. 3.15 -

Kaolin, water washed, fully calcined, bags c.i.f. 1.0. Georgia. ton 255.00 -

NF prep., colloidal, bacteria controlled, 50 lb. bags, 5,000 lb. tons. ib. .24 -

Kaolin, water washed, No. 1 costing, bulk, c.i.f. 1.0. Georgia. ton 94.00 -

No. 2 costing. ton 75.00 -

No. 3 costing. ton 73.00 -

No. 4 costing. ton 70.00 -

filter, garn. purposes, same basis. ib. 58.00 -

deionized water washed, uncolored paint 1 micron. ib. 182.00 -

dry-grd. activated soil, same basis. ib. 60.00 -

Karenite, No. 1, powd. bbs. ib. 2.25 -

No. 2, powd. bbs. ib. 1.85 -

Kola nut, bgs. ib. 49% .51

Ichthammol, NF, 200-kilo dms. ib. 4.25 4.50

Imidodiacid, acid, 6.5% min. dms. c.i.f. works. ib. 3.00 -

Indole, dms. ib. 25.50 -

Indolat, 50-kilo dms., 100 kilos or more, f.o.b. works. ib. 17.50 22.00

Iodine, crude, dms. ib. 13.50 18.00

Iodine, U.S.P. ib. 14.21 14.59

Iodotetrahydroxyethane, USP, XVI 50-lb. dms., 100-kilo, f.o.b. 88.00 45.00

Iodolom, NF, dms., 300-lb., f.o.b. works. ib. 24.00 -

4-Ionone, dms. ib. 16.20 -

b-Ionone, whole, bgs. ib. 16.10 -

Isopropenon, whole, bgs. ib. 28.00 -

Irish moss, dried, dried, f.o.b. 55.50 -

Iron blue, alkali-resistant, bgs. f.o.b. 2.70 -

Iron blue, reg. bgs. f.o.b. 2.00 2.15

Iron, purf., powd., pels, 10-100-lb. lots. ib. 1.00 -

Iron oxide, black, syn. bgs. f.o.b. 88% 75% ib. 88% 75%

Iron oxide, brown, syn. bgs. f.o.b. 88% 78% ib. 88% 78%

Iron oxide, brown, f.o.b. 1.0. 400-lb. lots. ib. 1.08 113

Iron oxide, brown, f.o.b. 1.0. 500-lb. lots. ib. 1.15 -

Iron oxide, brown, f.o.b. 1.0. 1,000-lb. lots. ib. 1.27 -

Iron oxide, brown, f.o.b. 1.0. 2,000-lb. lots. ib. 1.33 15

Iron oxide, brown, f.o.b. 1.0. 5,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 10,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 15,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 20,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 30,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 40,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 50,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 60,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 70,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 80,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 90,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 100,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 120,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 150,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 200,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 300,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 400,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 500,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 600,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 700,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 800,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 900,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 1,000,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 1,200,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 1,500,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 2,000,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 3,000,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 4,000,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 5,000,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 6,000,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 7,000,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 8,000,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 9,000,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 10,000,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 12,000,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 15,000,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 20,000,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 30,000,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 40,000,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 50,000,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 60,000,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 70,000,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 80,000,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 90,000,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 100,000,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 120,000,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b. 1.0. 150,000,000-lb. lots. ib. 1.41 -

Iron oxide, brown, f.o.b.

RIGGING/DISMANTLING DEMOLITION/ASBESTOS REMOVAL

WE ARE EXPERTS AT DISMANTLING, REERCTION, RIGGING DEMOLITION AND ASBESTOS REMOVAL WITH TERRIFIC REFERENCES BOTH NATIONALLY AND INTERNATIONALLY

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DRYERS

Drum Dryers/Flakers
(1) 24" dia. x 38" Bullock 58 dble. drum
dryer, 1000 cu. ft.
(2) 32" dia. x 108" Slev Knox Cl dble. drum
dryer
(3) 32" dia. x 178" Sandvik 98 belt flaker
(4) 38" dia. x 120" Slev Knox Cl dble. drum
dryer
(5) 38" dia. x 28" chrome plated
drum
(6) 48" dia. x 40" Cl flaker, mfg. by Buffalo
Forster
(7) 48" dia. x 40" drum daker, nickel plated
drum, mfg. Slev-Nos

Fluid Bed
(1) 600 cu. ft. Aeromatic, batch, 9'9" x 66" 1000 cu. ft. Aeromatic Model ST 100, sanitary
BB

(1) Flapdoor Model FA 250, 58, 20 HP

Holoilite

(1) western precipitation Model P8080-A,
twin screw, 12" dia. x 20" long, 58 comp.,
jkt. rated 15 ps, complete with 7.5 HP
var-speed drive.

(1) 110 cu. ft. Kutter Precoressor, CS, single
screw, 18" x 18" long, rated 10 ps (at 340)
F., airoated & chain drive by 1.5 HP
var-speed drive.

Rotary Vacuum

(1) 200 cu. ft. Stokes, 58 const., comp.
(2) 198 cu. ft. Pfaudler, Double Cone, G/3, 30
8FV, 15 cu. ft. Blaw Knox, Nickel

(2) 198 cu. ft. Blaw Knox, 58
(3) 60 cu. ft. Titekum Double Cone

(4) 50 cu. ft. Gemco, 31858 sanitary, double
cone

(5) 57 cu. ft. P. K. Horis. Thin Film, vac. int., 8' 150
(6) 50 cu. ft. P. K. Twin Film, 30488

Spray

(1) 30" x 3' Bowen Laboratory w/3" cone bot-
tom, SS const., w/centrifugal atomizer, 3
HP blower & motor, 100 ps

(1) 30" x 3' Bowen Laboratory w/2" cone w/centri-
fugal atomizer, SS const.

(1) 7'10" dia. Die-Hydrate Complete System,
sanitary 85

(1) 18" dia. Bowen comp. system SS const.,
new 1978

CENTRIFUGES

(1) Dufaux 68PX 300, 58, 20HP
(1) Unived Model B-10 Podbilnik, Alloy 20

(2) Aherpex AB-26, 58

(3) Sharples A-19P, 31858

(4) Alfa-Laval SS Decanter, Horiz. Mdl. NH314

(5) Dor Oliver Mdl. CH30, CSU "Marco," 31858
const., 160 HP

(6) Baker Perkins 8-22 "Pusher Type," 58, 50 HP
200 cu. ft. 24" dia. x 24" contour bowl.

(7) 60 cu. ft. 24" dia. x 24" contour bowl.

(8) Sharples P-3000, 31858, 30HP

(9) Sharples P-1000, 58, 20HP

(10) Unived Bush B-96, 317L 85

(11) Toluhol 48" x 24" perf. basket, 31858
sanitary, auto. plow & discharge, rated 60
cu. ft., 10' x 900 RPM, 20 HP.

(12) Toluhol 48" x 24" Batchmaster, 31858, perf.
basket, w/hyd. plow & 20HP hyd. drive

(13) Toluhol 48" x 24" Batchmaster, rubber lined,
perf. basket, w/hyd. plow & 20HP hyd. drive

(14) Toluhol 48" x 24" Batchmaster, Horiz.
perf. basket, w/hyd. plow & 20 HP
hyd. drive.

(15) Western Sales 48" x 30", 31858
perf. basket, 20/10 HP

(16) Sharples Tondine 48" x 30", 31858, perf.

(17) Alfa-Laval Model MAPX 210 T24, 58, 20
perf. parts

(18) Sharples C-27, 31858, 20HP

(19) Sharples C-20, Super-D-Hydrate, 58, 20
perf. basket, 20/10 HP

(20) Dor Oliver Mercos Screamer Model C-400 X2,
all SS, 16 screw dia., 10 HP

PARTIAL LISTING ONLY

RIGGING DISMANTLING RE-ERCTION DEMOLITION

IDM

RECENT PURCHASES

• FILTER BONANZA •
Sparkler pressure leaf filters,
All stainless Steel Construction
2-Modles #3304
1-Modles #3302
1-Modles #1604
1-Modles #33026

400 gal. G/L Pfaudler Vert Re-
cycler, 55 ps, 1750 gal. Reactor 316 SS, 15 PSI
Int. 40 ps Jctk.

St Regis Bag Pecker, Model #718
MLT.

5000 Gal. 304 SS Jctktd., Mix
Tank

2" dia. x 3" Chrome Plated Fleker

**Alfa-Laval Centrifuge, Model
NX214/314.**
8000gal. CS, Ammonia Storage
Tank, 250 PSI.

60 cu. ft. Pk Blender 304 SS w/int. bar
2 cu. ft. Merlon Paddle Blender
2 cu. ft. PK Blender w/pln bar SS
175 cu. ft. PK Blender 316 SS
3.5 cu. ft. Prodec-Henkel Mixer, SS
500 liter Wels Mixers, SS
Littleford KFM-600 Mixer SS (2)

1000 gal. 316 SS Reactor, 15 & 20/50 ps
Jkt., 10 HP

1000 gal. 316 SS Reactor, 100/30 ps Jkt., 10 HP

2" dia. x 3" Chrome Plated Fleker

EQUIPMENT WANTED
GOOD, USED, CHEMICAL,
PHARMACEUTICAL & RELATED
EQUIPMENT - CENTRIFUGES,
DRYERS, FILTERS, REACTORS,
TANKS ETC.

**WE WILL PURCHASE INDIVI-
DUAL ITEMS OR COMPLETE
PLANTS**

**CALL OUR OFFICE TODAY. TOP
DOLLARS PAID. NO DEAL TOO
BIG OR TOO SMALL.**

GLASS...GLASS...GLASS
WE ARE GLASS SPECIALISTS WITH
A TREMENDOUS INVENTORY FEATU-
RING UNUSED, USED AND RE-
CASSSED ITEMS. OUR SHOP PER-
SONNEL ARE FULLY TRAINED TO
HANDLE GLASS.

REACTORS

Glass Lined
4,000 Gal. Pfaudler, 100/90 ps, TW
1,000 cu. ft. Pfaudler, 100/90 ps, 4"Rw

1,000 Gal. Pfaudler, RABO Series, 1000
FV, 40 ps, 40"Rw

1,000 Gal. Pfaudler, RABO Series, 1000
FV, 40 ps, 40"Rw

1-400 Sq. Ft. R/L Sparkler

1-327 Sq. Ft. 304SS, Ind. Filler, 11
leaves

1-220 Sq. Ft. Durco 316 SS, 11 Leaves
1-260 cu. ft. Pfaudler, 100/90 ps, 8H
drive

500 Gal. Pfaudler 600/80 ps, 8H
drive

50 Gal. Pfaudler 600/80 ps, 24 ps, 8H

1-Approx. 208 Sq. Ft. SS, Sparkler,
Hertz.

1-200 Sq. Ft. SS, Hercules, Hertz.

1-191 Sq. Ft. Enzinger, SS, Vert., 75 ps
1-157.64 sq. Ft. Sparkler model 55-28, 31858

1-150 Sq. Ft. Horiz., 12 Vert. Leaf
316SS

1-135 Sq. Ft. NL, Bower, Vert.

1-35 Sq. Ft. Hercules Model 5, 316 SS,
horiz. tank vert leaves 50 ps

1-37.5 cu. ft. P. K. Horis. Thin Film Dryer, 304/10L
50 cu. ft. P. K. Twin Film, 30488

1-20 Cu. Ft. Abbe Twin Cone, 304SS

1-Approx. 208 Sq. Ft. SS, Sparkler,
Hertz.

1-200 Sq. Ft. SS, Hercules, Hertz.

1-191 Sq. Ft. Enzinger, SS, Vert., 75 ps
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Hertz.

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1-157.64 sq. Ft. Sparkler model 55-28, 31858

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316SS

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Hertz.

1-200 Sq. Ft. SS, Hercules, Hertz.

1-191 Sq. Ft. Enzinger, SS, Vert., 75 ps
1-157.64 sq. Ft. Sparkler model 55-28, 31858

1-150 Sq. Ft. Horiz., 12 Vert. Leaf
316SS

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1-35 Sq. Ft. Hercules Model 5, 316 SS,
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50 cu. ft. P. K. Twin Film, 30488

1-20 Cu. Ft. Abbe Twin Cone, 304SS

1-Approx. 208 Sq. Ft. SS, Sparkler,
Hertz.

PERRY SAVES YOU TIME & MONEY
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DRYERS

Bla Knox 5'4" x 4' SS vac. dryer, 600 cu. ft.
Bla Knox 38" x 20' SS, 72 cu. ft.
Bla Knox 65" x 36' vac. dryer, nickel
Metals 24" x 48" flaker, chrome plated
Sandvik 45" x 24" SS ball mill, UNUSED
Sargent 60" x 45" SS conveyor dryer
Stokes 6" x 11" drum taker
Bla Knox 32" x 90" dbl. drum
Bullock 42" x 120' dbl. drum, 160 psi
Aeromatic 6ST-5 fluid bed dryer, 5/10 K
Witte 30" x 10' fluid bed, 55, sanit. cooler
Stokes 36 sq. ft. Lyophilizer freeze-dryer
Rosenberg 36" x 20' rotary dryer, 315 SS
Rosenberg 5" x 25' 304SS rot. hot air dryer, w/cyclone, etc. (2)
10" x 10' Louvilledt 304SS rotary
10" x 10' GATX rot. steam tube dryer, 140 psi (4)
Wiemers 1/2" x 24" Turbo-dryer, 304SS
P-45 cu. ft. vac. dryer, 304S SS (2)
P-20 cu. ft. vac. dryer, 304L SS (2)
Abbe 30 cu. ft. 304SS recycler
Devine 110 cu. ft. 304 SS vac. dryer
Pneud 165 cu. ft. glassed vac. dryers (2)
Abbe 30 cu. ft. 316SS vac. dryer
Devine 370 cu. ft. 316SS vac. dryer
Devine 564 cu. ft. vac. shell dryer
Rheo 30" SS spray dryer
Turbulair 48" x 7' spray dryer
Bowen 72" spray dryer, 33
Bowen 90" spray dryer, 33

KETTLES-REACTORS, SS

30,000 gal. 304SS fermenter, 14" x 24", 25 psi/vac.
cells, 200 cu. ft. agit. (4)
5,000 gal. 304SS, atm. Int., 75 psi Kt. agit.
4,000 gal. 304SS kettle, 15 psi Kt., 60 psi agit.
3,000 gal. 316SS kettle, 20 psi Kt., 60 psi agit. (2)
2,500 gal. 304SS reactor, 75 psi/FV Int., 160 psi (4)
1,500 gal. 304SS kettle, 15 psi Kt., 50 psi agit. (3)
1,500 gal. Pfaudler 316L SS reactor, 5/FV, 100 psi Kt. agit. (2)
1,160 gal. 304SS reactor, 75 psi/FV Int., 25 psi Kt., 50 psi agit.
900 gal. 304SS reactor, 75 psi/FV Int., 150 psi Kt., 50 psi agit.
600 gal. 304SS reactor, 300 psi Int., 150 psi Kt., 50 psi agit. (3)
500 gal. 304SS reactor, 150 psi Int., 150 psi Kt., 50 psi agit.
300 gal. 316SS reactor, 75 psi/FV Int., 60 psi Kt.
(500), 316SS and 304SS reactors and kettles from 5
gallon to 400 gallon... call for list.

BIG PFAUDLER 316SS REACTORS

(3) 15,000 gal. Pfaudler, 316SS,
12'6" x 18', 100 psi, 200 psi Kt. agit.
(4) 10,000 gal. Pfaudler, 316SS, 11'6" x
12'4", 100 psi, 180 psi, 100 psi Kt. agit.

REACTORS...GLASS

2 gal. Pfaudler, 750 psi/FV, 50 psi Kt.
20 gal. Pfaudler, 38 gal, 50 psi Kt., agit. (2)
50 gal. Pfaudler, jktd.
50 gal. Pfaudler, 25 gal, 100 psi Kt.
50 gal. Pfaudler, 100 psi/vac., 50 psi Kt., agit., 1975
100 gal. Pfaudler, 25 gal, 50 psi Kt., agit.
150 gal. Pfaudler, 25 gal, 50 psi Kt., agit.
300 gal. Glascore, 25 gal/vac., 50 psi Kt., vari-drive agit.
800 gal. DeMetrich, 65 psi/vac., 105 psi Kt., 50 psi agit.
500 gal. DeMetrich, 65 psi/vac., 105 psi Kt., 50 psi agit.
750 gal. Pfaudler, 25 psi 85 psi Kt., 875 psi agit.
1,000 gal. Pfaudler, 100 psi, 90 psi Kt.
1,000 gal. Pfaudler, 75 psi/vac., 50 psi Kt., 100 psi agit.
1,000 gal. DeMetrich, 100 psi/vac., 90 psi Kt., 100 psi agit.
1,000 gal. Pfaudler, 100 psi/vac., 90 psi Kt., 100 psi agit.
2,000 gal. Pfaudler, 100 psi/vac., 90 psi Kt., 150 psi agit.
2,000 gal. Pfaudler, 150 psi, 90 psi Kt., #7WS agit.

NEW LIQUIDATION! CHEMICAL / POLYMER PLANT....ILLINOIS ..BUY BEFORE REMOVAL AND SAVE!!

Bird 32" x 60", centrifuges, 316SS, contour (2)
Welex 6" Extruder, 700 HP, 30:1 L/D (6)
Welex 6" Extruder, 400 HP, 30:1 L/D (2)
Conair 24" Vibratory feeder, 40 HP (2)
Rosenberg 5" x 25' 304 SS rot. hot air
dryer, 10 HP, (3)

Sweco & Keson 60" screens, SS (2)

K-Tron 7000# hr. twin screw volumetric
screader, SS, (5)

Pfaudler 50 cu. ft. 316L SS reactor, FV/-
160 psi / 5 HP agit. (2)

Pfaudler 10,000 gal. 316L SS reactor, 150
psi/FV Int., 180 psi Kt., hyd agit (4)

Worth. Plant oil comp., 323 CFM @ 125 psi,
75 HP, Model #4-BB-2 (2)

17,000 gal. & 12,000 gal. 316 SS Tanks (3)

PERRY
for
Process
Equipment



PERRY

600
LIQUIDATION

NEW & UNUSED
PROCESS EQUIP., 1982,
IN ORIGINAL PACKING
... SOUTH CAROLINA, CALL
Phone (609) 267-1600

CENTRIFUGES

Sharples P-5400 D-Center, 316SS, Carbide liner, late (2)
Sharples P-3400 D-Center, 316SS, liner (2)
Sharples P-600 D-Center, 316SS, back drive
Bird 12" x 30", 316SS, Decanter, 20 HP
Bird 18" x 38", 316SS, Decanter (3)
BINS, 304L SS connects, 1300 cu. ft./1970 psi,
11" x 11" x 18" high, steel reinforced (2)
CENTRIFUGE, Bird 24" x 60", 304SS, contour-10
Bird 24" x 38" Decanter, 304SS, contour-10
Bird 24" x 60" Decanter, steel
Bird 24" x 90" Decanter, 316 SS
Bird 24" x 90" Decanter, 304SS, carbide liner, 1981,
USED (3)
Bird 32" x 50" Decanter, Monel, contour (2)
Bird 32" x 50" Decanter, 304SS, contour
DeLaval HX214-3 Decanter, 304SS, 20 HP (2)
Sharples A51BV "Super," SS (5)
Sharples A52BV "Super," SS
DeLaval BPPX-213-30, 316SS separator/deadbeads (3)
Westfalia SAM1507, Deadbead/Separator, 316SS
Krug 10" pusher, 316SS, 15 HP
Beko-Perklin 17" pusher, 304SS, 40 HP
Sharples P-1800 D-Sub-beaker, 100 HP
Tolhurst 48" Batchmixer, rubber lined, 30 HP
Sharples 48" Tornado-Matic, 56, 26 HP
DeLaval 48" Mark 11, 165SS hyd.
DeLaval 48" Mark 11, 165SS hyd.

FILTERS-VACUUM

35" x 1' Don-Oliver, fiber glass S q. ft.
35" x 1' Amerid, 316 SS, 9 sq. ft.
40" x 1' Bird-York, 316 SS, 9 sq. ft.
4" x 16" Elmo, 316SS, 64 sq. ft.
5" x 1" Elmo, "Econimic" polypropylene, UNUSED
5" x 1" 14" x 9" Passaver 200 bar press, 250 psi (2)
5" x 1" Elmo, 50, 200 sq. ft., (3)
5" x 1" Amerid, 316SS, precoat (2)
5" x 1" Don-Oliver, 250 sq. ft., 316SS, precoat
5" x 1" Elmo, 316SS, precoat, 350 sq. ft., (3)
10" x 1" Elmo, 316SS, precoat, 314 sq. ft.
11" x 1" Elmo, 316SS, precoat
12" x 1" Impco, 304 SS, 450 sq. ft.
12" x 1" Koniplus, 304SS, 625 sq. ft., flatbelt disch. (2)
45" dia. Elmo lifting pen, vac. filter, 316 SS

TANKS & VESSELS

12" x 1" Amerid / Hogen #12, 55
54 sq. ft. Fins, 55, Kt.
65 sq. ft. It. Artisan "Dynamic" filter/washer, SS (2)
140 cu. ft. Niagara #36-14016 SS (2)
600 cu. ft. U.S. Autol #1000, 304SS
1000 cu. ft. U.S. Autol #1000, 304SS
13" Homan filter press, 21 plates, 6S, sanit.
30" Sperry filter press, 11 cu. ft.
30" Shiner filter press, 640 sq. ft., hydraulic
42" Shiner filter press, 777 sq. ft., hydraulic
48" Shiner ALP recessed filter press, 640 sq. ft., 275 cu. ft.
48" Glow, polypropylene recessed, 1600 cu. ft.

PULVERIZERS

Mikro 950A classifier, 5 HP
Mikro #20A classifier, 50
Mikro #20A pump, 50, 5HP
Pallman #1000 pump, 100 HP
Pallman #1000 pump, 50/75 HP
Alba porosifier, 304SS, 36" x 24", 36" x 24", 45" x 40", 45" x 40", 45" x 45" (7)
Raymond 5" side roller mill, 150 psi, 1981, UNUSED
Raymond 6" side roller mill, 150 psi, 1981, UNUSED
Raymond 673512 1440 roller mill, 60, blwzr (2)
Raymond 673512 1440 roller mill, 60, blwzr

LIQUIDATION

3.5 cu. ft. Henschel #115BD, 17/20 KW
11.5 cu. ft. Henschel #115JBS, 82/48 HP
13.7 cu. ft. Lodige #1600/K1200, mix/cool comb.
15 cu. ft. Strong-Scott 304SS blower (3)
20 cu. ft. P-1800 D-Sub beaker (3)
FURNACE, C-E Air Co., "Co-Pak" thermo
oxidizer, direct gas fired 6'x2" W x 7'9" H x
12'6" L (4)
MIXER, Air mix blander system, Koppers-Sprout
Weidron #38-50, 500 cu. ft., 304SS, 8" x
19'10" w/483 sq. ft. dust collector (2)
MIXERS, Webb, 59" W x 15' twin shaft paddle
mixers or pug mills, 304SS contacts, (2)
PACKAGING SYSTEM, design to fill bags, pel-
lets, shirr wrap, etc. automated system.

PULVERIZERS

Mikro #17H, 125 HP
Mikro #17H, 125 HP
PUMPS, Able #H-87-45 triplex pump, 30
GPM @ 1500 psi, 50 HP
PUMPS, Peebody #14DDH-2 cooling tower
pumps, 2000 GPM @ 140' head, 100 HP
SHRINK WRAPPERS, CTX Prod. #PSB/4X40
shrink wraps (10)

MIXERS, BLENDERS

3.5 cu. ft. Henschel #115BD, 17/20 KW
11.5 cu. ft. Henschel #115JBS, 82/48 HP
13.7 cu. ft. Lodige #1600/K1200, mix/cool comb.
15 cu. ft. Strong-Scott 304SS blower (3)
20 cu. ft. P-1800 D-Sub beaker (3)

PUMPS

PUMPS, Able #H-87-45 triplex pump, 30
GPM @ 1500 psi, 50 HP

PULVERIZERS

Mikro #17H, 125 HP

LIQUIDATION

3.5 cu. ft. Henschel #115BD, 17/20 KW

11.5 cu. ft. Henschel #115JBS, 82/48 HP

13.7 cu. ft. Lodige #1600/K1200, mix/cool comb.

15 cu. ft. Strong-Scott 304SS blower (3)

20 cu. ft. P-1800 D-Sub beaker (3)

FURNACE, C-E Air Co., "Co-Pak" thermo

oxidizer, direct gas fired 6'x2" W x 7'9" H x

12'6" L (4)

MIXER, Air mix blander system, Koppers-Sprout

Weidron #38-50, 500 cu. ft., 304SS contacts, (2)

PACKAGING SYSTEM, design to fill bags, pel-

lets, shirr wrap, etc. automated system.

SHRINK WRAPPERS, CTX Prod. #PSB/4X40

shrink wraps (10)

SHRINK WRAPPERS, CTX Prod. #PSB/

CMR MARKETPLACE

CHEMICAL MARKETING REPORTER'S CLASSIFIED ADVERTISING SECTION

COPY DEADLINE: Wednesday Noon preceding date of publication.

RATES/Classified Ads: \$57.75 for 36 words or less; \$9.75 for each additional six words or fraction. No display. First two words printed in bold face type. Non-display advertisements payable in advance, except for contract customers (not subject to agency commission).

REPLIES: Send replies to classified ads with box numbers to CHEMICAL MARKETING REPORTER, 100 Church St., New York, NY 10007-2694.

INFORMATION: For further classified advertising information, call 212/732-9820.

CHEMICALS OFFERED

Following products from People's Republic of China available in large quantities. Inquiries invited. 10 M/T Ephedrine HCl, 10 M/T Pseudoephedrine. Both for drug manufacturer, 30,000 M/T Barite Lumps for petroleum drilling and chemical industries. For further information, contact Alan Cohen, (619) 365-8910 — Telex 478286. Treaty or Fax 516-365-8039.

Imidazole 98 per cent. Purified Hydrochloride "Major Manufacturer" comes on board with full production in December. Inquiries invited. Call or Write Raymond Rizzo, 818-365-4534. Chem Sources, Inc. 1156 Leure Canyon Blvd. Suite 117, Mission Hills, CA 91340.

Lard Oils, all grades — addicesters, tallow, steerines — methyl esters of tallow, lard & vegetable oils — sperm oil substitutes — blown oils. Manufacturer 35 years. Export, domestic. Vapor, Inc. 804-398-3578 — 1510 Columbus, Portsmouth, Va 23704.

CHEMICALS OFFERED/WANTED

Chem/Mert Corp. will buy all of your surplus or off spec chemicals, plastic, pharmaceuticals and resins. Current bargain offerings: 22M lbs. Pentyltriethyl Tetraesterate; Der 687 Resin; 40 M/T Ethylene T-30; 18M lbs. Kraton 04141; Calcium Acetate, U.S.P. and Geric Acid. Prompt efficient National service. Chem/Mert Corporation, 840 N. LaSalle St., Chicago, IL 60610, (312) 787-6800.

CHEMICALS WANTED

Active buyer of surplus chemicals, pigments, dyes, resins, waxes, plastics etc. Call toll free 1-800-831-5337 or 817-823-8736. Chem/Mert Corp. Chemical Div. 17 Industrial Dr., Holden, MA 01520.

All Surplus — Chemicals — Resins — Oils — Colors Solvents — Plastics — Specialties — Intermediates — bought by: Rambach Chemical Co., Inc. 52 Vosey Street, PO Box 5187, Newark, NJ 07105. Phone: (201) 589-7774.

Cast for your surplus chemicals, resins, colors, pharmaceuticals, dyes, other raw materials, by products, wastes, residue and off-spec materials. Morgan Chemicals Inc., 5500 Main Street, Williamsville, NY 14211 (716) 632-4000; Telex 919133.

Realize Top Value from the sale of your surplus Chemicals. We buy surplus Chemicals, Plastics, Resins, Waxes, etc. Bonmar Chemical Co. P.O. Box 494, Fair Lawn, NJ 07410. Phone: (201) 731-2446; Telex: 710-3043.

Reyn Corp. will buy your surplus chemicals, resins and resin raw materials — prime or off-specification. Reyn Corp. P.O. Box 63, 1610 W. Blankens St., Linden, NJ 07038. (201) 892-8787.

We buy surplus chemicals, colors, resin solvents, plasticizers, dry products, Oils, waxes, resins, plasticizers, Easem Color & Chemical Co., Inc. 85 Roosevelt Ave. Dept. C.P.O. Box 1028, Valley Stream, NY 11582. (516) 791-4445.

FACILITIES OFFERED

Toll Blending — Major U.S. Chemical Specialties manufacturer in S.E. Pennsylvania looking for suitable products to toll blend and/or repackage. Adjacent to I-95. Rail loading, 7 loading docks, inside/outside tank farm and large industrial area. Equipment for dry or wet blending, including chemical processing products. Liquid and paste reactors from 500 to 7,000-lb. capacity; tank farmers from 1000 to 4000-lb. sizes; activated Meltex-Dek mixer with 2000-lb. capacity. Packaging facilities include tank truck, wet or dry product bins, steel or fiber drums, 50-lb. bags, 5-gal. & 1-gal. 8-oz. containers. For information write CMR Box 728.

POSITIONS OFFERED

Chemical Sales aggressive chemical distributor currently has high potential sales position available in northern N.J. Minimum 2-3 years sales and experience with good customer follow-up, familiarity with resins and technical sales required. We offer competitive compensation-territory opportunity. Send resume to G.O. Box CMR-721.

Plant Administrator/Manager. Tech mfg. executive with extensive direct operations, 75% mfg/25% admin. Nitro, W.V. plant. Ultimately becomes C.E.O. Candidate currently plant or general manager of one chemical company. 8 yrs + experience organic chemicals produced on batch/custos basis. Chem. or Chem. Eng. degree, proven track record directly in technical mfg. and support operations. Management and strong organic synthesis experience essential. Sales experience, sales management, sales approaches, stock options, perdi, etc. Send resume and brief letter with current salary to Ariel Chemicals, 91 Carolyn Blvd., Farmington, N.Y. 11735, 616-894-8000.

"Sales manager position offered to the right person knowledgeable in sales of Carbomer Resins 2-5 years sales experience essential. Position requires 10-40 percent travel (Eastcoast). We offer salary and commission on your sales. Please submit a full resume of job history and qualifications to Box CMR-722."

CHEMICAL IMPORTS

Continued from Page 61

NAPHTHOL Top Tex (274 lbs) (Nurnberg Express) Bremerhaven, 8/12.

Order 104 lbs (1300 lbs) (Ever Gentle) Hamburg, 8/13.

Order 38 lbs (440 lbs) (Ever Gentle) Hamburg, 8/13.

NICOTINE Viscous 800 bgs (44821 lbs) (Dart American) Antwerp, 8/13.

VLACU Products 1185 bgs (181438 lbs) (Ever Gentle) Antwerp, 8/13.

VLACU Products 355 bgs (40360 lbs) (Ever Gentle) Antwerp, 8/13.

SODIUM BROMATE Ameribrom 606 dms (18122 lbs) (Export Paragon) Halle, 8/13.

SODIUM CARBOXYMETHYL CELLULOSE Alcimed, Hamburg, 8/13.

Express 050 bgs (43144 lbs) (Ever Gentle) Hamburg, 8/13.

SOORUM CYANINE Ooglossa 1860 dms (38772 lbs) (Nurnberg Express) Bremerhaven, 8/13.

Midwest 522 dms (36368 lbs) (Export Paragon) Gelsenkirchen, 8/13.

SOORUM CHLOROCYCLOCYANURATE 256 dms (6772 lbs) (Ming Ocean) Kobe, 8/14.

SOORUM ERYTHORBATE PMP Fermentation Products 320 dms (38065 lbs) (Ming Ocean) Kobe, 8/14.

SODIUM ETHYLATE Dynamil Nobel 15 bbl (493 lbs) (T.L. Eliezer) Bremerhaven, 8/14.

Vitachem 20 bgs (37214 lbs) (Oarl American) Antwerp, 8/13.

VLACU Products 1185 bgs (181438 lbs) (Ever Gentle) Antwerp, 8/13.

SODIUM GLUCONATE Alkox Chemia 700 bgs (35450 lbs) (Ever Gentle) Antwerp, 8/13.

SODIUM HYDROFOLY 355 bgs (40360 lbs) (Ever Gentle) Antwerp, 8/13.

188 dms (44352 lbs) (Nurberg Express) Hamburg, 8/14.

SOORUM PERBUTYLATE Meticnorgard 343 dms (40000 lbs) (Allianz Compan) Gelsenkirchen, 8/13.

SODIUM METHOXIDE Key Fries 162 bgs (38487 lbs) (Kazimir Puski) Bremerhaven, 8/13.

SOORUM PERBUTYLATE TEA Meticnorgard Degase 420 bgs (42483 lbs) (Oarl American) Antwerp, 8/13.

SOORUM SILICATE ICC 0roup 20 pmt (44928 lbs) (Sulka) Rotterdam, 8/13.

SODIUM TRIPOLYPHOSPHATE New China Trig 560 bgs (32350 lbs) (Lars Merek) Hong Kong, 8/7.

780 bgs (44844 lbs) (2m Savannah) Halle, 8/13.

TITANICUM CHLORIDE Dax Transport 800 bgs (4474 lbs) (Adam Mielke) Bremerhaven, 8/13.

Lukens Chemical 350 bgs (178544 lbs) (Export Paragon) Cadiz, 8/13.

N.L. Ind 128 pmt (327803 lbs) (Allianz Compan) Gelsenkirchen, 8/13.

4800 bgs (493800 lbs) (Ever Gentle) Antwerp, 8/13.

18800 bgs (370517 lbs) (TFL Jalloran) Rotterdam, 8/13.

270 pmt (566493 lbs) (Ever Gentle) Antwerp, 8/22.

S. P. Tolman 800 bgs (41502 lbs) (Sulka) Zeebrugge, 8/21.

Sacco Pigments & Solvents 80 bgs (41502 lbs) (Sulka) Zeebrugge, 8/21.

SCM 4400 bgs (227254 lbs) (Sea Land Voyager) Rotterdam, 8/14.

TOXICIDE OF CANADA 1800 bgs (38304 lbs) (Balandra Zeebrugge), 8/21.

Sun Chemical 1800 bgs (38304 lbs) (Adam Mielke) Sun Chemical, 8/21.

Wattled Contain 780 bgs (39590 lbs) (Adam Mielke) Bremen, 8/19.

Husky Drug Material 700 bgs (39590 lbs) (Adam Mielke) Rotterdam, 8/10.

Oro & Chemical 2000 bgs (4010 lbs) (Ever Gentle) Antwerp, 8/13.

Kennim 3000 bgs (157087 lbs) (Kazimir Puski) Rotterdam, 8/11.

N.L. Ind 4000 bgs (207004 lbs) (Kazimir Puski) Rotterdam, 8/11.

4800 bgs (245930 lbs) (Sea Land Voyager) Bremerhaven, 8/11.

6000 bgs (433971 lbs) (Ever Gentle) Hamburg, 8/22.

N.L. Ind 800 bgs (330860 lbs) (Ever Gentle) Antwerp, 8/22.

U-Z

ULTRAMARINE Hilton Oval Chemical 1820 bgs (10465 lbs) (TFL Jalloran) Rotterdam, 8/14.

Whitlock Clark & Daniels 680 bgs (39015 lbs) (Balandra Zeebrugge), 8/21.

Hilton Davis Chemical 680 bgs (45181 lbs) (TFL Jalloran) Rotterdam, 8/14.

UREA FORMICAE Challenger Electrical Engt 220 bgs (41914 lbs) (2m Savannah) Halle, 8/10.

14000 bgs (103000 lbs) (2m Savannah) Halle, 8/10.

620 bgs (45104 lbs) (2m Savannah) Halle, 8/10.

Triboro Electric 020 bgs (48184 lbs) (2m Savannah) Halle, 8/10.

920 bgs (45114 lbs) (2m Savannah) Halle, 8/10.

4140 bgs (191000 lbs) (2m Savannah) Halle, 8/10.

VANILLIN 2000 bgs (10000 lbs) (Xiang He) Halle, 8/10.

PSYLLUM 8000 Mejer 470 bgs (43862 lbs) (Amerika New York) Kehl Fekkan, 8/18.

PROYACETOL RHOM Pouline 720 bgs (41072 lbs) (Andrea Marzoli) Marzoli, 8/13.

RHODAMINE Ails Pwdg 00 dms (0 lbs) (Oriental Foresight), 8/15.

YEBAT Caribbean Sales 1 pmt (0 lbs) (Sea Land Voyager) Rotterdam, 8/14.

ZINC PHOSPHATE Mineral Pigments 800 bgs (4000 lbs) (Sea Land Voyager) Rotterdam, 8/14.

S-T

SACCHARIN Mirona 5 pmt (432 lbs) (Neptune Gart) Koto, 8/11.

SILICIC ACID Rhone Pouline 160 dms (43800 lbs) (Andrea Marzoli) Marzoli, 8/13.

SODIUM BICARBONATE Prascol 1400 bgs (7778 lbs) (Vitacu Products 1185 bgs (181438 lbs) (Ever Gentle) Antwerp, 8/22.

Vitacu Products 355 bgs (40360 lbs) (Ever Gentle) Antwerp, 8/22.

SODIUM BROMATE Ameribrom 606 dms (18122 lbs) (Export Paragon) Halle, 8/13.

SODIUM CARBOXYMETHYL CELLULOSE Alcimed, Hamburg, 8/13.

Express 050 bgs (43144 lbs) (Ever Gentle) Hamburg, 8/13.

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SOORUM SILICATE ICC 0roup 20 pmt (44928 lbs) (Sulka) Rotterdam,

CHEMICAL PROFILE

METHANOL

SEPTEMBER 22, 1986

SUPPLY

PRODUCER	CAPACITY*
Air Products, Pascagoula, Miss.	80
Borden, Gelsmar, La.	200
Celanese, Bishop, Tex.	150
DuPont, Beaumont, Tex.	250
Georgia Gulf, Pascagoula, La.	128
Lyondell Petrochemical, Channahaw, Tex.	200
Tennessee Eastman, Kingsport, Tenn.	55
Taxaco, Delaware City, Del.	100
Sterling Chemicals, Texas City, Tex.	100
Total	1,286

*Millions of gallons annually of methanol. Allegheny Chemical Company mothballed its 130-million-pound-per-year Pascagoula, La. facility in July, 1984. The unit is now for sale. Celanese indefinitely idled its 230-million-gallon-per-year Clear Lake, Texas facility in early 1984. DuPont's Beaumont plant takes natural gas from its Conoco subsidiary and Phillips Petroleum Company. DuPont takes about half the output for internal needs. Phillips takes about 10 percent for its MTBE operation while Getty and Tenneco take equal portions of the remainder for merchant sales. DuPont restarted the Beaumont plant in March of 1986 after shutting the unit in early 1985. DuPont will also shut its Deer Park, Tex., 200-million-gallon-per-year plant this October. The company will turn the unit over to USI Division of National Distillers & Chemicals Corporation as part of an agreement to end the DuPont/USI Syngas joint venture. USI is undecided on whether to restart the unit. Georgia Gulf was formed January, 1985 in a management buyout of Georgia-Pacific chemical interests. Rohm and Haas has a 22-million-gallon-per-year plant on standby at Deer Park, Tex. Sterling Chemicals acquired its methanol unit in an August leveraged buyout of Monsanto's Texas City, Tex. site. Sterling said it will close the unit in the first quarter of 1987. Taxaco acquired its facility in December, 1984 when it bought Getty Oil Company. Tenneco has an idled 140-million-gallon-per-year unit at Pasadena, Tex. Profile last published 9/19/83; this revision, 9/23/86.

DEMAND

1985: 1.28 billion gallons; 1986: 1.35 billion gallons; 1990: 1.6 billion gallons.

GROWTH

Historical (1976-1985): 4.1 percent per year; future: 4.5 percent per year through 1990.

PRICE

Historical (1953-1986): High 71c. per gallon, tanks, f.o.b. Gulf Coast; low, 11c. per gallon, semia basis. Current: 27c. per gallon, Gulf Coast barges.

USES

Formaldehydes, 27 percent; MTBE, 25 percent; acetic acid, 11 percent; chloromethanes, 7 percent; solvents, 8 percent; methyl halides, 4 percent; methyl methacrylates, 4 percent; methylamines, 3 percent; methylene chloride, 2 percent; utility power, 1 percent; miscellaneous and exports, 2 percent.

STRENGTH

MTBE demand will expand by up to 15 percent annually through 1990. Shutdown of over 600 million gallons of annual capacity in the US in the last 3 years has moderated methanol oversupply. Falling US natural gas prices have

Continued on Page 69

BASF Plastics Unit

Continued from Page 7

opment in the plastics sector. (In addition, BASF bought Immont Corporation in August, 1985, and purchased the fibers operations of American Enka in December, 1985.)

The company's most recent investment decision came last week. BASF said it will build an advanced composites production facility at its main complex in Ludwigshafen.

The facility will produce a range of pre-preg and structural adhesives made from epoxy resins impregnated with carbon fibers. The facility will be fully on stream in early 1988 at a cost of \$19.5 million.

BASF says the laminates plant will provide a European base for BASF Structural Materials, Inc., a Charlotte, N.C.-based unit of BASF, which was formed in Spring 1985 following BASF's purchase of Celanese Company's laminates business.

These assets include the "Celox" carbon fibers division which produces carbon fibers, and Narmco Materials, a maker of film adhesives and pre-preg.

To meet US growth for these advance composites in aerospace uses, BASF Structural Materials has launched a \$20 million carbon fiber precursor plant at Williamsburg, Va. to support a recently expanded 150-metric-ton-per-year carbon fiber plant at Rock Hill, S.C. The Ludwigshafen plant is expected to meet European demand for laminates in both aerospace and automotive applications in the late 1980's.

The addition of sheet molding compound capacity gives BASF greater flexibility in marketing its line of advanced plastics. However, the company's strength continues to lie in its large and growing stable of engineering thermoplastics.

TWO RECENT ADDITIONS

Its most recent additions are two lines of polymer blends, one alloying polypropylene ether (PPE) and high-impact polystyrene (HIPS) under the trade name "Lurenyl," and the other blending PPE with nylon, called "Ultraloy."

These two products are in the first stages of commercialization, BASF says, and are made in small quantities in a pilot plant. BASF is currently building a 12,000-metric-ton-per-year plant for "Lurenyl" and "Ultraloy" products, which is due on stream in the second quarter of 1987. The company plans to later extend this capacity to 24,000 metric tons.

BASF is basic in PPE, HIPS, and nylon. The company plans to market the new alloys to the automotive industry in racing hub caps, spoilers, air vent grids, wing mirror housings, instrument panels, steering column casings and other components. It will also sell the plastics to the electronics industry for use as machine housings, printed circuit boards, and other applications.

The company is paying sharp attention to the automotive industry, which has embraced plastics in a wide variety of non-structural, and increasingly, in structural applications. In addition to its PPE-based alloys, BASF markets a number of engi-

neered plastics to the auto industry, including:

- "Novolen" group of polypropylene products for making fenders on low-medium priced cars.
- "Ultradur" and "Ultralend" families of polybutylene terephthalate (PBT) blends used in spoilers and fenders of higher-priced cars. "Ultradur" consists of elastomer-modified PBT, while "Ultralend" alloys PBT with polycarbonate.

- "Ultramid" KR 4448, a mineral-reinforced nylon 6 tailor-made for the front shock absorber cap of the Opel Ascona. This thermoplastic can be painted on line.

- "Ultramid" KR 4470, a fiber glass reinforced nylon 6 composite steering wheel for the 1987 "Quattro Sport."

- New grades of "Elastolan," glass reinforced thermoplastic polyurethanes used in painted components needing chip resistance, such as door trim, and door sill coverings.

- "Ultraform" N 2200 G4, a glass reinforced acetal resin used to make torsion bars in certain models of Mercedes-Benz autos.

Looking ahead, BASF is committing its resources to a European research project, "Carmat 2000," that seeks to design and build an auto made mostly from plastics. BASF says it will contribute a plastic roof, laminate engine mounting, and sheet molding compound based engine hood to the project.

While BASF is devoting large amounts of time and resources to developing engineering resins, it is not neglecting standardastics. The company has come up with several new grades of its "Novolen" polypropylene products, for automotive and packaging applications.

New catalyst systems designed by BASF have also breathed new life into the company's polyethylene products.

House Okays

Continued from Page 7

accepted a proposal by Rep. Berkley Bedell (D-Iowa) to eliminate a \$50,000 exemption for 127 pesticide ingredients for which EPA already has issued re-registration standards. Making those ingredients subject to the full \$150,000 fee would raise another \$6 million for EPA's work.

But lawmakers then defeated an attempt to fill the remaining \$48 million shortfall by doubling the fees on chemical companies.

"We have gone too far and been through too much controversy to lose this bill to a veto because it is not properly funded," argued Rep. Steve Gunderson (R-Wis.) in offering the amendment. "You are going to have to choose between properly funding this legislation or cutting some other program later."

Rep. Bedell countered that "pesticides benefit all of society" and therefore the chemical industry should not have to bear an inequitable share of the funding.

Rep. Pat Roberts (R-Kan.) also opposed the amendment, noting that any increase in fees would be passed along to farmers, the primary consumers of pesticides.

Continued

on

Page 8

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